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ABSTRACT

These briefing papers focus on key roles and issues postsecondary education will face in the 21st century. Together they are intended to stimulate debate and discussion and to encourage alternative perspectives and thoughtful actions. This collection is meant to be the opening of a necessary public conversation. The papers are: (1) "Help Wanted: Advanced Education and the Changing Workforce" (Anthony P. Carnevale); (2) "Postsecondary Education's Roles in Social Mobility and Social Justice" (William G. Bowen); (3) "The School-College Connection" (Arthur Levine); (4) "Changing Demands on Teacher Education and Professional Development" (James B. Hunt, Jr. and Molly Corbett Broad); (5) "Education Uses of Information Technology: A View for State Leaders" (Margaret A. Miller and Steven W. Gilbert); (6) "Higher Education for the Next Century: Changing State Needs and Roles" (Patrick M. Callan and Gordon K. Davies"; and (7) "Convergence and Competition: Transforming Postsecondary Education - An International Perspective" (Alan Wagner). (Contains 5 figures, 1 table, 8 endnotes, and 16 references.) (SLD)

EDUCATION COMMISSION OF THE STATES

ECS

BRIEFING PAPERS

Transforming Postsecondary Education for the 21st Century

What's Inside

Workforce implications

Social mobility

School/college connection

Teacher education

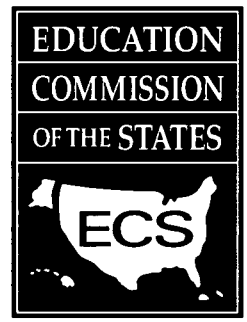
Information technology

Changing state needs

International competition

Briefing Papers

TRANSFORMING POSTSECONDARY EDUCATION FOR THE 21st CENTURY



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INTRODUCTION AND OVERVIEW

Changes are rapid and intense within higher education and in the need for diverse forms of postsecondary education. Accelerating changes and escalating demands bring challenges and opportunities that go well beyond those of the past. The examples are many, including:

- As our economy becomes global and our workplaces more competitive, advanced education and skills are becoming increasingly important and valued. How will we choose to provide and allocate such valued resources?
- As our society becomes more diverse and complex, postsecondary education must reinforce individual opportunity as well as the health of society as a whole. How is this best accomplished?
- As our schools adapt to new standards and roles, pressures mount on colleges and universities to support and adopt compatible reforms. How do we encourage such large-scale institutional change?
- As computers and telecommunications become ubiquitous and universal, information technologies become central to the generation and transmission of knowledge. What roles can technologies play in teaching and learning?
- As government roles are restructured, all public services come under increased scrutiny. How do we plan, support and manage postsecondary education under these pressures and constraints?

These and other challenges will have a profound impact on higher education as we have known it in the past, and on all postsecondary and advanced education and training as we will need it in the future. The question is, how will we perceive and address these challenges?

As a state-membership organization, the Education Commission of the States (ECS) seeks to stimulate debate around such issues. Working with governors, lawmakers, educators, boards, business and community leaders across the country, ECS also seeks to encourage the leadership, put into place the policies and develop the public support necessary to address the core education needs and issues we face as states and as a nation.

One vehicle for stimulating both discussion and supporting action is the annual ECS Chairman's Initiative. This initiative, designated by each incoming ECS chairman, focuses on an aspect of education policy that is consistent with the needs of member states and with ECS' mission. The chairman's initiative is developed and promoted through activities, reports, dissemination efforts and other means during the chairman's term, and then continued by ECS in subsequent years through externally funded projects.

When Governor Paul E. Patton of Kentucky assumed the ECS chairmanship in July 1998, he designated *Transforming Postsecondary Education for the 21st Century* as his initiative. This decision reflected his leadership in addressing postsecondary education issues in his home state of Kentucky, and paralleled the gubernatorial or board-led reexamination of higher education roles in a growing number of states, including Oregon, Washington, North Dakota, South Dakota, Illinois, West Virginia and others. It also drew from and will contribute to the growing interest in such initiatives by coordinating and governing boards, legislatures and institutional leadership across the country.

As part of his initiative, Patton requested several prominent individuals in higher education and public leadership positions to identify and address, in short briefing papers, key issues involved in the "transformation" of postsecondary education. Those briefing papers are contained in this report. The issues and authors include:

- Changing economic and workforce needs, Anthony P. Carnevale
- Social mobility and social justice, William G. Bowen
- School-college connections, Arthur Levine
- Teacher education and professional development, James B. Hunt Jr. and Molly Corbett Broad
- Integration of information technology, Margaret A. Miller and Steven W. Gilbert
- Changing state needs and roles, Patrick M. Callan and Gordon K. Davies
- International convergence and competition, Alan Wagner.

The briefing papers focus on key roles and issues postsecondary education will face in the 21st century. Together, they are intended to stimulate debate and discussion, to encourage alternative voices and perspectives, and to contribute to thoughtful actions at the institutional, state and national levels. While the issues are clearly important, this collection of papers is not meant to be all-inclusive, nor does it necessarily reflect the views of ECS or its commissioners. The debate needs to be open, and the papers are intended to stimulate the dialogue and the many voices that need to be heard. They are, in short, intended as the opening of a necessary public conversation and as a prelude to action. Little progress can be expected without substantial public attention, close examination and thorough vetting of the roles that postsecondary education can and should play in our future.

Charles S. Lenth
Director, *Transforming Postsecondary Education for the 21st Century Initiative*

HELP WANTED: ADVANCED EDUCATION AND THE CHANGING WORKFORCE

by Anthony P. Carnevale

Help Wanted: College Required

More frequently than ever, this is the message corporate America is sending to the nation's job seekers. More than two-thirds of the jobs being created in the fastest-growing sectors of the U.S. economy — office jobs (including legal, sales and marketing, accounting, managerial and editorial positions), health-care jobs and teaching positions — now require at least some education beyond high school.

The office sector alone is having an enormous impact on the U.S. economy and the skills it demands of its workers. The percentage of U.S. jobs in the office sector has grown to 41% of the nation's 133 million jobs in 1995, up from 30% of all jobs in 1959.

And office jobs are not simply a growing piece of a fixed U.S. jobs "pie"— they also are helping to make the pie grow. By 2006, the number of U.S. office jobs is projected to grow by 4.4 million.

But creating enough college-educated workers to meet the demand will require smarter investment strategies for the dollars we now devote to postsecondary education. The stakes are high. States that do not push enough of their students through college are going to lose jobs, skilled workers and tax revenue to locations that do. In an increasingly global economy, these jobs could as easily go to workers in Tokyo as in Topeka.

Many of these new jobs are in education and health care — jobs associated with the development and maintenance of human capital. Why? Because the new economy requires more education, the demand for health care continues to rise (especially as the population ages), and productivity is not rising as fast in these education and health-care jobs.

All of us are using more technology on the job, but the proportion of the workforce that uses advanced technical training and systems in doing its work has grown slowly as a share of the total workforce. Instead, shifting demands within the technology workforce — like the shift from pipefitters and welders to technicians — are driving job openings and worker shortages.

Meanwhile, the number of jobs that do not require a college education is falling. Factory jobs as a percentage of total employment have declined from 33% in 1959 to 19% in 1995, and farm jobs continue to decline. Low-wage services jobs, which constitute about 20% of all U.S. jobs, have held steady since the 1950s and are not expected to increase over time.

Even in factories or on the farm, the increasing use of high-technology equipment is demanding workers with more college-level skills. These changes already are limiting job options for some

workers, especially Hispanic and African-American workers with few skills. But as the nature of the U.S. workplace shifts and global competition grows, America faces the challenge of ensuring that supply can meet demand.

The good news is that a growing number of students will come of age as the new century dawns. "Generation Y" (or the "baby-boom echo" generation) will enter college between 2000 and 2015, and promises to be bigger and more racially and culturally diverse than any generation before it. The bad news, however, is that not enough of these students will be going to college.

As a result of our past education successes and our surging demographic changes, by 2015 there should be an additional one million Hispanic undergraduates and an additional 400,000 African-American undergraduates on our nation's campuses. But these gains in diversity will be more apparent than real. The share of Hispanic and African-American youth on our nation's college campuses trails their share of all 18- to 24-year-olds. Even with the dramatic absolute gains in minority undergraduates, unless there are significant increases in minority college participation rates, the shortfall between Hispanic and African American presence among all youth and their presence on college campuses could widen the gap to 800,000 minority students by 2015.

Improving access to college for students of all races, ages and income backgrounds will require a decisive response from educators and government officials at every level — elementary, secondary and postsecondary education and local, state and federal governments. Education approaches and financial aid programs need review to ensure students are getting the skills and funding they need to enter college, finish college and secure their place in the new American workforce.

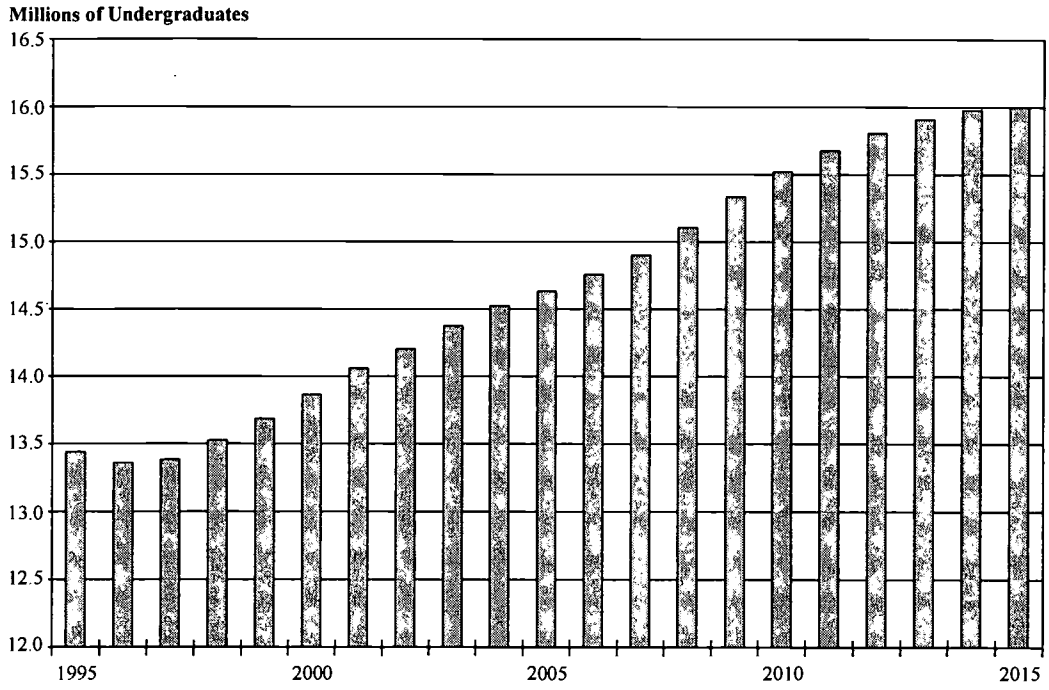
College Degrees: A Must for New Job Seekers

More than ever before, American employers — whether industries, associations, government agencies, telecommunications firms, schools or hospitals — are making college degrees a prerequisite for new jobs. "Where did you go to college?" has replaced "Did you go to college?" as the question facing applicants in job interviews, online questionnaires and application forms, because many employers already assume their applicants have a diploma.

There are many reasons that most of the new jobs in the U.S. economy now require a college education. For one thing, college-educated Americans are more common than ever: in 1959, only 20% of workers between the ages of 30 and 59 had at least some college, while 56% of workers in that age group do today.

But there are other significant reasons, most having to do with the changing composition of the U.S. occupational structure. Specifically, the demand for college is being driven by a combination of flat growth in low-skilled services jobs, moderate growth in the absolute number of new technology-sector jobs and rapid job expansion in health care, education and what we call the office sector.

Figure 1. Undergraduate Enrollment Will Expand by 2.6 Million Students



Low-Skill Jobs Are Stagnant

First, the number of low-wage, low-skill services jobs in the U.S. economy — jobs that do not require any postsecondary education — is not growing. These jobs, which include restaurant and retail jobs, still account for only 20% of all jobs in the U.S. economy — the same percentage as when Dwight Eisenhower was president.

But while the number of these low-wage jobs has stayed the same, the type of people holding them have changed over the past 20 years. In general, the share of women in such jobs has dropped substantially — from 23% in 1973 to 17% in 1995 (although the share of Hispanic women in these jobs rose from 23% to 26%). In contrast, the share of men in such jobs rose — from 10% in 1973 to 13% in 1995 (see Table 1 on next page).

Table 1. Overall, the Percent of Females in Counter Jobs Dropped Between 1973 and 1995 . . .

	1973	1995	Percentage Point Change
White	21%	16%	-5%
African American	33	17	-16
Hispanic	23	26	+3
	---	---	---
All Females	**23%**	**17%**	**-6%**

. . . While the Percent of Males in Counter Jobs Rose

	1973	1995	Percentage Point Change
White	10%	12%	+2%
African American	11	16	+5
Hispanic	15	23	+8
	---	---	---
All Males	**10%**	**13%**	**+3%**

The decline in women's dependence on low-wage, low-skill jobs is due to a number of factors, including increased educational opportunities and job growth in the traditionally female sectors of education and health care, as well as expanding managerial and professional opportunities for women in office work. The increase in male participation reflects shrinking job opportunities for less-skilled men who have limited options in an economy with fewer blue-collar jobs.

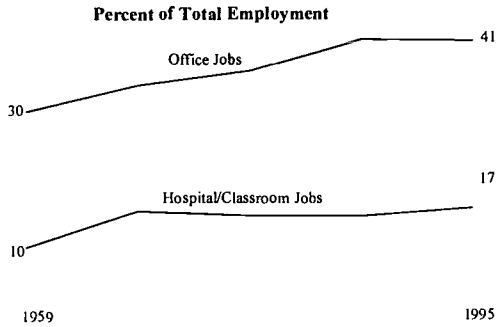
The Impact of Technology

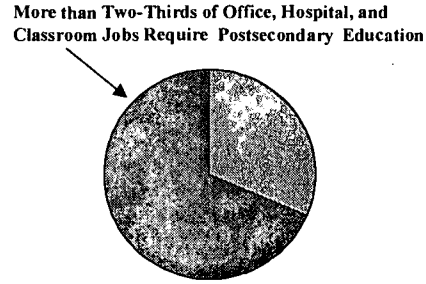
The lightning-speed growth of the high-technology industries — such as computers and fiber-optics, as well as related industries, including telecommunications, software manufacture and design, and Internet service providers — has done two things. It has helped shrink the number of factory jobs, while increasing the skill level necessary for remaining manufacturing positions. And while new high-tech positions are creating employment, that new employment is not offsetting these losses.

Factory jobs have decreased — from 33% of the workforce in 1959 to 19% in 1995 — in large part because new technological innovations make it possible to make or repair products or components with fewer employees.[1] Moreover, growing productivity among highly skilled factory workers has helped hold the number of high-skill blue-collar jobs to 10 million. In fact, the United States is the most productive economy in the world. It has increased real manufacturing output by

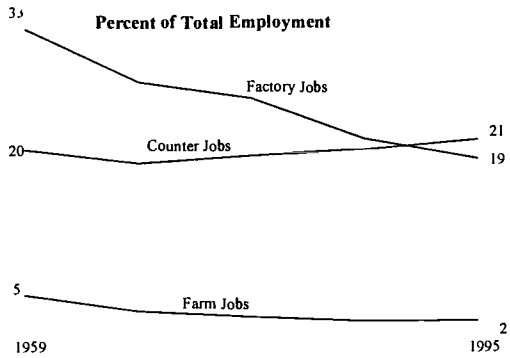
more than $2 billion annually while cutting by nearly one-half the number of production workers since 1960.

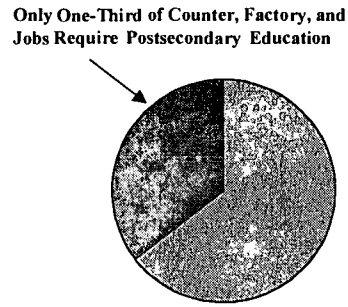
Figure 2. Jobs in Growing, Good-Paying Occupations Require Postsecondary Education . . .





. . . While Jobs in Declining or Low-Paying Occupations Generally Do Not





With the introduction of new technologies and flexible, high-performance work processes, the workers filling factory jobs have more skills — and more education. In 1959, only about 8% of workers on the factory floor had ever attended college. By 1997, more than 34% of factory workers had.

Unskilled Hispanic males, who traditionally have relied on factory jobs to make their way into the middle class, have been hit particularly hard by this shift. In 1973, the first year that the U.S. Census Bureau started collecting data on Hispanic workers as a group, the percentage of Hispanic workers in industrial employment was 43%. By 1995, it had fallen to 28% — a full 15 percentage points. By comparison, the share of African Americans in factory jobs fell from 34% to 24% over the same period, and the share of white workers in factory jobs fell from 30% to 20%.

Contrary to popular belief, this loss in factory jobs is not being fully offset by gains in new high-technology jobs.[2] This is largely because, as with factory jobs themselves, it takes fewer people to make or repair technology. And, as with the growing office, health care and education sectors, more education is expected of these workers: 86% of high-technology jobs require at least some college education and many require B.A. or graduate degrees.

As a result, the high-technology field is usually not the answer for displaced factory or other workers — unless they have the ways and means to go back to school. Hispanic and African-American workers remain largely underrepresented in the high-technology field. In 1995, 6.7% of white workers held these jobs, compared to 4.1% of African Americans and 3.5% of Hispanics. The gap widens in high-technology jobs requiring B.A. or graduate degrees, with 3.3% of white workers holding these jobs vs. 1.1% of African-American workers and 1% of Hispanic workers.

Ironically, while high-tech jobs are not growing as fast as jobs in offices, schools or health-care institutions, the transition from a traditional to a high-technology manufacturing base is outpacing the number of American workers qualified for these new high-technology positions. In 1998, Congress, at the urging of the U.S. business community, authorized more than 142,000 additional H-1B visas over the next three years so that companies can recruit more college-educated, high-technology workers from overseas.

Education, Health-Care Professions Are Booming

As the baby-boomer population ages and its children — Generation Y, born between 1982 and 1996 — crowd the nation's schools, demand for workers in both the health-care and education fields has grown rapidly. Unlike factory or high-technology jobs, teaching children or caring for patients are tasks that are more difficult to replace with technology. Technology can make things easier — doctors use virtual reality to prepare for delicate surgeries, and computers now appear in many classrooms. But machines simply cannot replace the human touch: they cannot perform surgery or ensure that a child truly understands how to multiply fractions. As a result, the number of health-care jobs in the United States has grown from 3.7% of all jobs in 1959 to 6.7% of all jobs in 1995. Over the same period, education jobs have grown from 5.6% to 7.9% of all jobs.

Most of these new jobs, however, require some amount of postsecondary education. More than one-half of education and health-care workers are managers or professionals, positions that require a two- or four-year college education. Overall, 74% of all education and health-care workers have at least some college education.

Hispanic and African-American workers are underrepresented among the better-paying jobs in these fields as well. Only one in three Hispanic workers in the education and health-care fields has a managerial and professional job; they are more likely to be orderlies and cafeteria workers than doctors, nurses, teachers or school administrators. African Americans actually have a larger representation than whites in the education and health-care fields but, again, are more likely to hold low-skill jobs requiring less education.

Office Jobs: Where the Growth Is

Another reason for the increase in demand for more highly educated employees is that office jobs demand them. And that is where most of the new jobs are.

The U.S. economy has, in large part, traded its hard hat for a briefcase. The country that made the assembly line famous now employs more office workers than factory workers. Office jobs, a definition that also includes those working in the headquarters of manufacturing companies, now number 54 million, or 41% of the 133 million jobs in the American economy.

By 2006, the number of new office jobs is expected to swell by 4.4 million. In comparison, the information technology field is only expected to add 750,000 new jobs by then. How can this be when every governor in America has his or her state's CEOs beating the drum for new technology jobs and technology training?

As in other economic sectors, when one takes a careful look at what workers in "technology firms" actually do, it turns out that fewer workers than one thinks need or use technical skills.

Consider Intel Corporation, the world's primary silicon-chip producer, with $30 billion in annual sales and more than 60,000 employees. Surprisingly, only about one in four Intel employees requires advanced technical training. So just what do Intel workers do?

About 15% of the company's employees are researchers (see Table 2 on next page). An additional 10% represent a small share of the many Intel employees who are involved in chip production and facility maintenance and require advanced skills. The other production and maintenance workers use sophisticated machinery, but perform relatively routine functions. An additional 30% of the Intel workforce are office workers to the core — managers, administrators and sales staff.

Office workers — stockbrokers, accountants, managers, lawyers, editors, salespeople and the like — also are America's best-paid group of employees. On average, male office workers with B.A. degrees or more earned $63,100 a year in 1995, and female office workers with B.A. degrees or more earned an average of $36,400. (In comparison, annual salaries in the health-care and education fields in 1995 averaged only $57,400 for males and $33,500 for females.) Office workers also are well-educated: 66% of office workers today have at least some college education, while 30% have B.A. degrees.

Hispanics, in particular, are not getting their share of these new office jobs. Only one in four Hispanic men and one in three Hispanic women were employed in office work in 1995, compared to almost one-half of white workers and 36% of African-American workers.

Table 2. Only 25% of Intel Workers Require Advanced Technical Training

Work Category/ Job Class	Education/ Training	Percent of Intel Workforce
Research	Bachelor's or advanced degree required	15%
Chip Production and Facility Maintenance		25% of Intel workers require advanced technology training.
Repair and Set-Up	Advanced tech training with some college required	10%
Operators and Packers	High school or some college	45%
		75% of Intel workers do not require advanced technology training.
Management, Administration and Sales	Some college, B.A. or advanced or advanced degree	30%
All Intel Workers		100%

Source: Author's calculation from 1998 Intel Annual Report.

Standards Rising for Existing Jobs

Clearly, the number of new jobs requiring college degrees, across virtually every sector, is growing. But growing, too, are the skill and education requirements for existing jobs in the U.S. economy. The largest share of the increase in postsecondary education requirements — about 72% — comes from higher skills required in jobs that previously did not require college-level skills. A smaller, but still significant share — about 28% — comes from occupational shifts toward jobs that traditionally have required postsecondary education.

To put it another way, nearly three-quarters of the demand for workers with higher education comes from educational upgrading within each occupation. The remaining one-quarter is due to a shift in the distribution of occupations to those having historically required higher education credentials. In other words, the rise in the share of managers and professionals from 17% in 1959 to 29% in 1997 represents the shift between jobs. The increase in the share of managers with a four-year college degree from 40% in 1959 to 57% in 1997 represents educational upgrading.

This is the case at most every level: "elite" jobs, held by managers and professionals; "good" jobs, held by crafts workers, technicians or clerical employees; and low-skill jobs, held by factory workers and retail salespeople.

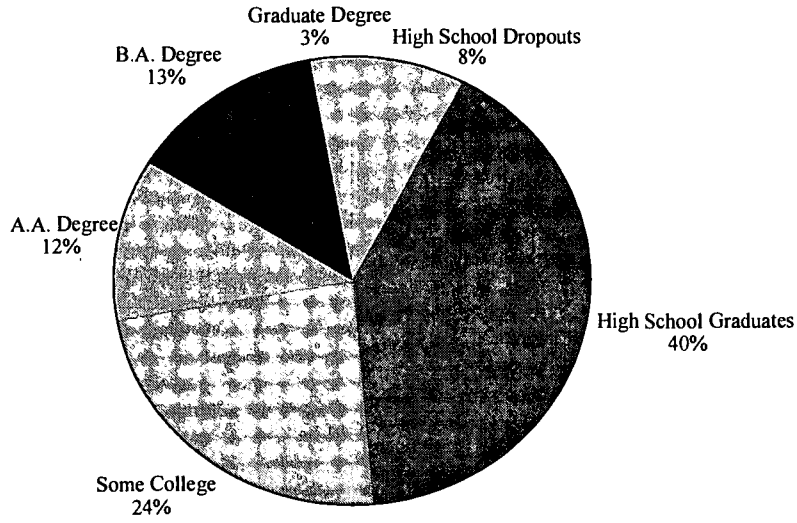
Between 1959 and 1996, the percentage of the nation's managers and professionals holding bachelor's degrees rose dramatically, from 41% to 62%. Over the same period, the percentage of these elite jobs that were awarded to individuals with no college education fell from 22% to 12%, while the percentage awarded to high school dropouts fell from 15% to 2%.

Today, 34% of the nation's 84 million prime-age workers (those between 30 and 59 years of age) hold high-paying managerial or professional jobs — jobs paying an average annual salary of $59,000 for men and $34,000 for women. Of these, more than 85% have at least some postsecondary education.

The story is the same among people who hold "good" jobs, such as crafts workers, technicians and clerical workers. In 1959, 57% of the men and 30% of the women holding such jobs were high school dropouts. By 1996, only 10% of the men and 5% of the women holding these same jobs were high school dropouts. Instead, more than one-half of the workers in these jobs in 1996 had two-year degrees or some college coursework. In 1959, only 14% of the men and 19% of the women holding these jobs had two-year degrees or less.

Today, 37% of the nation's prime-age workers hold these "good" jobs, which pay an average annual salary of $36,000 for men and $22,000 for women (see Figure 3 on next page). Of these, more than one-half have attended some college, more than one-third have two-year degrees, and more than 15% have four-year degrees or better.

Figure 3. Over One-Half of Good Technician and Skilled Jobs Require Postsecondary Education. The Average Pay for Good Jobs Is $36,000 for Men and $22,000 for Women



Campus, Workplace Diversity Are Increasing, But Not Fast Enough

From a diversity standpoint, there is good news: the percentage of Hispanic and African-American undergraduates in America's colleges and universities has grown, and their participation in the economy's better jobs has grown along with it.

As both minority and majority populations increase their college enrollment and graduation rates, the opportunity gap is closing slowly. But the gap persists, especially in attainment of B.A.s. In general, minority women are making more progress than minority men, especially Hispanic men. As a group, Hispanics are farthest behind.

Between 1973 and 1996, the share of Hispanics with some college education rose from 9.2% to 18.4% for men and from 7.5% to 24.4% for women. The percentage of Hispanics with four-year degrees rose over the same period, from 3.7% to 7.5% for men and from 3.8% to 10.4% for women. For African Americans, by 1995, 43% of males and 52% of females had some postsecondary education.

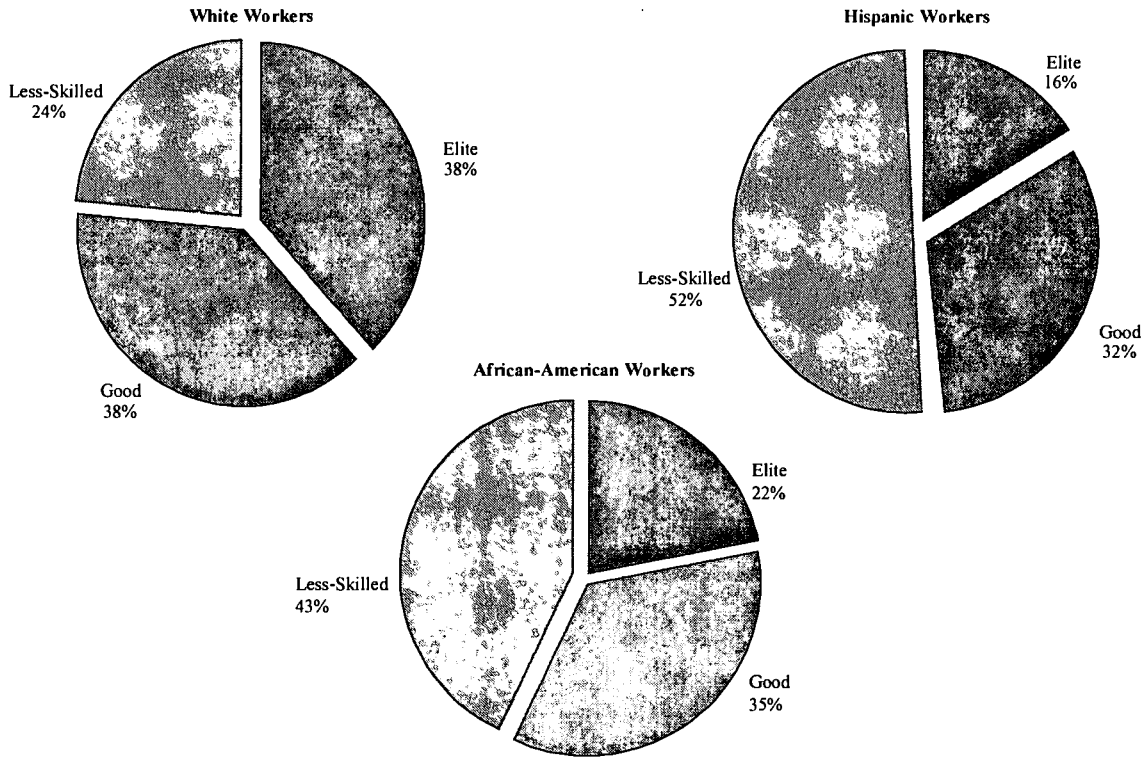
The number of Hispanics and African Americans holding better jobs has risen, too. From 1979 to 1997, the number of Hispanics employed in the economy's professional and managerial jobs rose by 3%, with a higher proportion of Hispanic women (19.8%) holding these jobs than men (13.3%). In 1995, 16.5% of African-American males and 23.4% of African-American females

held the nation's elite jobs, and 33% of African-American males and 34.7% of African-American females held "good" jobs.

But again, from a diversity perspective, there remains cause for concern. While African-American and Hispanic students are entering and staying in college in greater numbers — and thus landing the jobs that only a college degree can bring — so is the rest of the population. From 1973 to 1996, the number of white students with some college education grew from 13.3% to 27.2% for men, and from 11.9% to 29.4% for women. Over the same period, the number of white students awarded four-year degrees rose from 9.6% to 18.6% for men, and from 7.3% to 18.2% for women. And, on average, white students who enter college are more likely than either Hispanic or African-American students to finish college with a four-year degree.

Although more good and elite jobs are held by African-American and Hispanic workers than ever before, white workers continue to hold a larger percentage of the nation's elite and good jobs, while African-American and Hispanic workers hold substantially greater shares of the nation's less-skilled jobs as Figure 4 below shows.

Figure 4. Hispanic and African-American Workers Are More Likely Than White Workers To Be Employed in Less-Skilled Jobs



What Impact Would True Educational Equity Have on America's Economy?

These trend lines reveal a stubborn, troubling pattern. Right now, it appears that not enough members of Generation Y will go to college. Projections show that by 2006, low-skilled workers in the U.S. economy will outnumber low-skill jobs. But imagine an alternative scenario — one in which the African-American and Hispanic communities had the same distribution of college education as the white community.

First of all, we would fill more of those college jobs that might otherwise go begging, go to underskilled American workers or go to foreign workers. Second, the difference in national wealth that would result from this infusion of human capital would be startling. If African Americans and Hispanics had the same education as the white majority, African Americans would add $113 billion annually in new wealth, and Hispanics would add another $118 billion to the nation's annual economic output. Together, that is $231 billion a year, an amount equivalent to 6.8% of all Americans' earnings.[3] Moreover, assuming an average federal, state and local tax rate of 35%, the new wealth created by this new human capital would result in more than $80 billion in additional public revenues.

Increasing human capital among the African-American and Hispanic communities also would substantially benefit minority families. This new earning power from enhancements in human capital would reduce the proportion of Hispanic families with "inadequate" incomes from 41% to 21% and the proportion of African-American families with "inadequate" incomes from 33% to 24%.[4]

In sum, boosting the education and income of African Americans and Hispanics would have numerous economic benefits. First, it would help ensure an adequate supply of skilled workers. Second, it would substantially increase national wealth. Third, the revenue from higher employment and earnings could be used for critical public purposes or to reduce taxes. Fourth, and finally, higher incomes would substantially raise the standard of living of minority families and increase the quality of their lives in countless ways that cannot be measured.

College: Now More Than Ever

More than ever, college is a must. As noted above, more new jobs require college education, and more existing jobs are raising their skill requirements to college levels. As a result, postsecondary education has become this country's worker training and retraining system.

And though a bumper crop of young talent is moving through the nation's school system, we must redouble our efforts to ensure that these students enroll in college — and graduate. More Hispanic and African-American students are entering U.S. colleges and universities, but not enough. Many are limiting their college experience to two-year programs or just some college instead of finishing four-year programs. Meanwhile, the rising cost of a college degree is likely to have an impact even on those students who plan to attend college.

Yet without that college experience, these young people will find it difficult to form stable families, and too many could spend time on the welfare roll, not a payroll. The relative number of jobs that pay a family wage available to unskilled workers in the U.S. economy continues to drop.

Help is needed to ensure that the maximum number of Generation Y students make it into college and stay on to finish their degrees. This will take skill-building at every level of the nation's education system. And it will take some family-building as well: students who would be the first in their families to attend college must learn that, yes, college is for them, too.

The nation's postsecondary education institutions will need to handle the new wave of 18- to 24-year-old students from Generation Y, while maintaining their commitment to nontraditional students — those who are often older, have families and may be working or looking for work. Already, 42% of all college students are over the age of 24. Among Hispanics, more than one-half are above the age of 24.

Nontraditional students rely on two- and four-year institutions for retraining or a second chance. For instance, more than 75,000 dislocated workers used Pell grants, and 48% of them also used college loans to restart their careers in 1990-91, the most recent year for which these data are available. In 1996-97, 357,400 welfare recipients and 119,400 of their dependents used Pell grants to improve their prospects. Our own assessments suggest that 32% of women on welfare are ready to do postsecondary work and, with a boost from 200 hours of basic-skills preparation, another 37% would be ready.

If more is not done for the workforce of the future, the U.S. economy of the new century may face rough waters. Keeping the U.S. workforce well-educated is critical to filling the economy's jobs. This is crucial if America is to compete with its overseas competitors. This, in turn, is crucial to ensuring that America's high-wage, high-skill jobs are filled by Americans, in America. Without an educated workforce, companies may relocate or, as they did in 1998, bring in more overseas talent.

Better skill-building, more funding, greater access to a college education — an all-hands-on-deck approach to the education challenges of America's new century is required. The time for it is now.

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Endnotes

[1]International trade is another factor that can both create and eliminate jobs, particularly in the manufacturing sector. It is believed that two million of the 15 million jobs "lost" in manufacturing since 1959 (jobs that might exist today if manufacturing jobs accounted for the same percentage of U.S. jobs that they did in 1959) have been lost because of international trade, either as a result of increased foreign competition or the movement of a U.S.-based job to an overseas location. In general, U.S. jobs lost to international trade tend to be low-wage, low-skill jobs, while jobs gained through trade tend to be high-skill, higher-paying positions.

[2]For purposes of this discussion, "high-technology jobs" refer only to those jobs that are heavily science-based or use specialized machinery and equipment. These jobs generally require a bachelor's degree or more (such as engineers, chemists, computer systems analysts) or some specialized postsecondary education (such as computer programmers, medical technicians or cad-cam operators).

[3]In 1995, the 12 million Hispanic workers earned, on average, $18,300 for a total of $220 billion. If their earnings per worker equaled that of white workers (average earnings of $28,200), then total Hispanics' earnings would have been $338 billion or $118 billion more. In 1995, the 14 million African-American workers earned more per worker than Hispanics ($20,200), accounting for $287 billion. If their earnings had been equivalent to that of white workers, then their total earnings would have risen to $400 billion or $113 billion more.

[4]When all reported incomes are adjusted for family size, 41% of Hispanics, 33% of African Americans and 14% of whites are living in families below the "minimum but adequate" level, as defined by the U.S. Bureau of Labor Statistics. If, however, Hispanics and African Americans had the same education level and commensurate earnings as whites, the earnings of Hispanic men would increase by 71%, Hispanic women by 34%, African-American men by 53% and African-American women by 15%. The resulting household income distribution would leave 21% of Hispanic families and 24% of African-American families in households with incomes below the "minimum but adequate" level. It is noteworthy that even after equalizing education attainment, the proportion of African-American and Hispanic families with incomes below the "minimum but adequate" level is still substantially above the proportion of white families below the "minimum but adequate" income level (seven percentage points for Hispanics and 10 percentage points for African Americans). This remaining difference is due to many factors, but principally because, compared to whites, both Hispanics and African Americans have larger families, a younger age and earnings profile, and more single female-parent households.

POSTSECONDARY EDUCATION'S ROLES IN SOCIAL MOBILITY AND SOCIAL JUSTICE

by William G. Bowen

Higher education plays a unique role in our society. The obligation of a university is to the society at large over the long run, and, even more generally, to the pursuit of learning. Although this may seem amorphous, there is no escaping a university's obligation to try to serve the long-term interests of society defined in the broadest and least parochial terms, and to do so through two principal activities. Those activities are: advancing knowledge and educating students who in turn will serve others, within this nation and beyond it, both through their specific vocations and as citizens. Universities therefore are responsible for imparting civic and democratic values that are essential to the functioning of our nation.

Our society — indeed, our world — is and will continue to be multi-racial. We simply must learn to work more effectively and more sensitively with individuals of other races, and a diverse student body can make a profound and direct contribution to the achievement of this end. In the 1960s, barely 1% of law students and 2% of medical students in America were black. At that time, few leading professional schools and nationally prominent colleges and universities enrolled more than a handful of blacks.

Late in the decade, however, selective institutions set about to change these statistics, not by establishing quotas, but by considering race, along with many other factors, in assembling a diverse student body of varying talents, backgrounds and perspectives. Schools sought to achieve diversity to cross the racial borders that separated large segments of society and to reap the educational benefits to all students of learning on a diverse campus, in which they would transcend the misperceptions and stereotypes that had been born of racial separation. These selective institutions recognized that a student body containing many different backgrounds, talents and experiences would be a richer environment in which all students could better develop into productive, contributing members of society.

Amid much passionate debate, there has been little hard evidence of how these policies work and what their consequences have been. To remedy this deficiency, Derek Bok and I examined the college experiences of more than 60,000 students — approximately 3,500 of whom were black — who had entered 28 selective colleges and universities in the fall of 1976 and the fall of 1989.[1] We also surveyed a subset of these students (with a survey response rate of about 80%) and thus studied the later life experiences and views of 30,000 students.

This massive database, built jointly by the schools and the Andrew W. Mellon Foundation, for the first time links information such as Scholastic Assessment Test (SAT) scores and college majors to experiences after college, including graduate and professional degrees, earnings and civic involvement. Most of our study focused on African Americans and whites, because the Latino and Native American populations at these schools were too small in 1976 to permit the

same sort of statistical analysis. Nevertheless, many of the findings may be applicable to these groups as well. Our conclusions are set forth in *The Shape of the River: Long-Term Consequences of Considering Race in College and University Admissions* (Princeton University Press, 1998). This report attempts to summarize some of our findings.

Universities' Role in Choosing Students

As a necessary predicate, a university must have the freedom to decide which students it will admit and which criteria it will use in its admissions decisions. This academic freedom is crucial for a school to fulfill its mission. At bottom, admissions officers must decide which set of applicants, *considered individually and collectively,* will take fullest advantage of what the college has to offer, contribute most to the education process in college and be most successful in using what they have learned for the benefit of the larger society.

Any college or university to which admissions is highly competitive, such as Princeton University, has far more applicants who possess all the basic qualifications than it has places. Some candidates (a relatively small number) are so outstanding in every respect that they are obvious choices for admission by any standard. The real problems of choice arise in deciding which individuals to admit from among the large group who also have very strong qualifications, who are thought capable of doing the work and doing it well, but who are not so clearly outstanding as to be placed in the very top category.

In my experience, in deciding among this group, a school does not start from the premise that any applicant has a "right" to a place in a college or university. Instead, the starting premise is that a school has an obligation to make the best possible use of the limited number of places in each entering class so as to advance as effectively as possible the broad purposes the school seeks to serve. Within the very real limits imposed by the fallibility of any selection process of this kind, a school should try hard to be fair to every applicant; but the concept of fairness itself has to be understood within the context of the obligations of a university. Accordingly, in making these difficult choices among well-qualified candidates, considerations other than just test scores and grades come into play.

The relevance of these other considerations is based on the premise that the overall quality of the education program is affected not only by the qualities of the individual students who are enrolled, but also by the characteristics of the entire group of students who share a common education experience. While I believe this to be true for graduate programs, too, my own experience confirms the importance for undergraduate education and, as a consequence, affects admission decisions much more significantly at that level. If there is a difference, it is only one of degree, related partly to the ages and experiences of the students, partly to the purposes of their education programs and especially to the emphasis given to academic specialization, and partly to the respective roles of extracurricular and curricular activities.

In a residential college setting, in particular, a great deal of learning occurs informally. It occurs through interactions among students of both sexes; of different races, religions and backgrounds; who come from cities and rural areas, from various states and countries; who have a wide variety

of interests, talents and perspectives; and who are able, directly or indirectly, to learn from their differences and to stimulate one another to reexamine even their most deeply held assumptions about themselves and their world. As a wise graduate of Princeton University observed in commenting on this aspect of the education process, "People do not learn very much when they are surrounded only by the likes of themselves."

It follows that if, say, 2,000 individuals are to be offered places in an entering undergraduate class, the task of an admissions office is not simply to decide which applicants offer the strongest credentials as separate candidates for the college. The task, rather, is to assemble a total class of students, all of whom will possess the basic qualifications, but who also will represent, in their totality, an interesting and diverse amalgam of individuals who will contribute through their diversity to the quality and vitality of the overall education environment.

This concern for the composition of the undergraduate student body, as well as for the qualifications of its individual members, takes many forms. While a school of course is interested in enrolling students who are good at a great many things and not one-dimensional in any sense, it should also try to enroll students with special interests and talents in the arts and in athletics; it should seek a wide geographical representation; it should admit foreign students from a variety of countries and cultures; it should recognize the special contribution that the sons and daughters of alumni can make by representing and communicating a sense of the traditions and the historical continuity of the university; it should enroll students from a range of socioeconomic backgrounds; and it should work consciously and deliberately to include minority students, who themselves represent a variety of experiences and viewpoints.

Minority Performance

We must accept as a fact of life in contemporary America that the perspectives of individuals are often affected by their race as by other aspects of their background. If a university were unable to take into account the race of candidates, it would be much more difficult to consider carefully and conscientiously the composition of an entering class that would offer a rich education experience to all of its members. The unplanned, casual encounters with roommates, fellow sufferers in an organic chemistry class, student workers in the library, teammates on a basketball squad, or other participants in class affairs or student government can be subtle and yet powerful sources of improved understanding and personal growth.

Indeed, the data in our study prove what I have observed for years through experience — that diversity is valued and that "learning through diversity" actually occurs. Our study indicates that diversity is a benefit for all students, minorities and nonminorities alike. Moreover, the data overwhelmingly demonstrate that minority students admitted to selective schools had strong academic credentials, graduated in large numbers and did very well after leaving college. By every measure of success (graduation, attainment of professional degrees, employment, earnings, civic participation, and overall satisfaction), the more selective the school, the more blacks achieved (holding constant their initial test scores and grades).

It is true that compared with their extremely high-achieving white classmates, black students in general received somewhat lower college grades and graduated at moderately lower rates. The reasons for these disparities are not fully understood, and selective institutions need to be more creative in helping improve black performance, as a few universities already have succeeded in doing. Still, 75% graduated within six years from the school they first entered, a figure well above the 40% of blacks and 59% of whites who graduated nationwide from the 305 universities tracked by the National Collegiate Athletic Association.

Moreover, blacks did not earn degrees from these selective schools by majoring in easy subjects. They chose substantially the same concentrations as whites and were just as likely to have difficult majors, such as those in the sciences and engineering. These and other findings refute the argument that when black students are admitted to schools where many other students have stronger academic qualifications than their own — as measured by grades and test scores — that those students not only will drop out, but that they would have been better off attending a less selective institution.

Although more than half of the black students attending these selective schools would have been rejected under a race-neutral admissions regime — that is, if only the same proportions of black and white students had been admitted within each SAT interval — they have done exceedingly well after college. Fifty-six percent of the black graduates who had entered these selective schools in 1976 went on to earn advanced degrees. A remarkable 40% received either Ph.Ds or professional degrees in the most sought-after fields of law, business and medicine, a figure slightly higher than that for their white classmates and five times higher than that for blacks with bachelor's degrees nationwide. (As a measure of change, it is worth noting that by 1995, 7.5% of all law students in the United States were black, up from barely 1% in 1960; and 8.1% of medical school students were black, compared with 2.2% in the mid-1960s. Black elected officials now number more than 8,600.)

By the time of our survey, black male graduates who had entered selective schools in 1976 were earning an average of $85,000 a year, 82% more than other black male college graduates nationwide. Their black female classmates earned 73% more than all black women with bachelor's degrees. Not only has the marketplace valued the work of these graduates highly, but the premium associated with attending one of these selective institutions was substantial. Overall, we found that among blacks with similar test scores, the more selective the college they attended, the more likely they were to graduate, earn advanced degrees and receive high salaries. This was generally true for whites as well.

Despite their high salaries, the blacks in our study were not just concerned with their own advancement. In virtually every type of civic activity, from social service organizations to parent associations, black men were more likely than their white classmates to hold leadership positions. Much the same pattern holds for women. These findings should reassure black intellectuals who have worried that blacks — especially black men — would ignore their social responsibilities once they achieved financial success.

Personal Satisfaction

Were black students demoralized by having to compete with whites with higher high school grades and test scores? Is it true, as Dinesh D'Souza asserts in his book, *Illiberal Education*, that "American universities are quite willing to sacrifice the future happiness of many young blacks and Hispanics to achieve diversity, proportional representation and what they consider to be multicultural progress"? The facts are very clear on this point. Far from being demoralized, blacks from the most competitive schools are the most satisfied with their college experience. More than 90% of both blacks and whites in our survey said they were satisfied or very satisfied with their college experience, and blacks were even more inclined than whites to credit their undergraduate experience with helping them learn crucial skills. We found no evidence that significant numbers of blacks felt stigmatized by race-sensitive policies. Only 7% of black graduates said they would not attend the same selective college if they had to choose again.

Former students of all races reported feeling that learning to live and work effectively with members of other races is important. Large majorities also believed their college experience contributed a lot in this respect. Consequently, almost 80% of the white graduates favored either retaining the current emphasis on enrolling a diverse class or emphasizing it more. Their minority classmates supported these policies even more strongly.

Some critics allege that race-sensitive admissions policies aggravate racial tensions by creating resentment among white and Asian students rejected by colleges they hoped to attend. Although we could not test this possibility definitively, we did examine the feelings of white students in our sample who had been rejected by their first-choice school. They said they supported an emphasis on diversity just as strongly as students who got into their first-choice schools.

Merit

Our findings also clarify the much-misunderstood concept of merit in college admission. Many people suppose that all students with especially high grades and test scores "deserve" to be admitted and that it is unfair to reject them in favor of minority applicants with lower grades and test scores. But selective colleges do not automatically offer admission as a reward for past performance to anyone. Nor should they. For any institution, choosing fairly, "on the merits," means selecting applicants by criteria that are reasonably related to the purposes of the organization. For colleges and universities, this means choosing academically qualified applicants who not only give promise of doing well academically, but who also can enlarge the understanding of other students and contribute after graduation to their professions and communities. Though clearly relevant, grades and test scores are by no means all that matter.

Accordingly, an admissions policy that relied primarily on test scores would lead to the rejection of qualified minority students. The fact that, nationally, blacks are very underrepresented at the higher levels and very overrepresented at the lower levels ensures they will have substantially lower average SAT scores even if a college were to use precisely the same SAT cut-off in admitting white and black students. For example, if a school admitted every applicant with SAT scores over 1100 and none with lower scores, the white students would still have a higher

average SAT score than the black students because relatively more of them score at the upper end of the SAT distribution. This result occurs even though no racial preference was given in this hypothetical situation.

As a group, however, the black applicants are highly qualified. Of the black applicants at five of the 28 schools for which detailed admission data were available in 1989, more than 90% scored above the national average for black test-takers on both the verbal and math SATs, considered separately. The large majority of these black applicants handily outscored not only the average black test-taker, but also the average white test-taker. Moreover, the average SAT score for black matriculants in 1989 was slightly higher than the average SAT score for all matriculants in 1951.

Change of Direction

Talk of basing admissions mainly on test scores and grades assumes a model of admissions radically different from the one that exists today. Such a policy would mandate a fundamental change of direction for institutions that recognize the many dimensions of "qualification": the importance of a good fit between the student and the education program, the varied paths that individuals follow in developing their abilities, and the pitfalls of basing assessments of talent and potential solely on narrowly defined quantitative measures. Instead, as I described earlier, admissions officers have been "picking and choosing," as we believe they should always do — admitting the candidate who seems to offer something special by way of drive and determination, the individual with a set of skills that matches well the academic requirements of the institution, someone who will bring another dimension of diversity to the student body or a candidate who helps the institution fulfill a particular aspect of its mission.

Because other factors are important — including hard-to-quantify attributes such as determination, motivation, creativity and character — many talented students, white and black, are rejected even though they finished in the top 5% of their high school class. The applicants selected are students who were also above a high academic threshold but who seemed to have a greater chance of enhancing the education of their classmates and making a substantial contribution to their professions and society. Seen from the perspective of how well they served the missions of these education institutions, the students admitted were surely "meritorious."

Diversity Without Race?

Could the values of diversity be achieved equally well without considering race explicitly? The Texas legislature has tried to do so by guaranteeing admission to the state's public universities for all students who finish in the top 10% of their high school class. Others have suggested using income rather than race to achieve diversity. The available evidence indicates that neither alternative is likely to be as effective as race-sensitive admissions in enrolling an academically well-prepared and diverse student body.

First, the Texas approach would admit some students from weaker high schools while turning down better-prepared applicants who happen not to finish in the top 10th of their class in academically stronger schools. So long as high schools differ so substantially in the academic

abilities of their students and the level of difficulty of their courses, treating all applicants alike if they finished above a given high school class rank provides a spurious form of equality that is likely to damage the academic profile of the overall class of students admitted to selective institutions. Instead of being an effective substitute for race-sensitive admissions policies, this approach could well have the effect of diminishing the pool of students who can compete effectively for the most demanding positions of leadership in business, government and the professions.

Second, income-based strategies are unlikely to be good substitutes for race-sensitive admissions policies because there are simply too few blacks and Latinos from poor families who have strong enough academic records to qualify for admission to highly selective institutions. Children from poor black and Hispanic families make up less than half of all poor children and are much less likely than poor whites to excel in school. For example, the data show that among all students from families with incomes under $20,000 who also finished in the top 10% of their high school class, only one in six is black or Hispanic. Thus, moving from a race-sensitive admissions policy to a class-based one would substantially reduce the minority enrollments at selective institutions and severely impair current efforts to achieve racial diversity.

Potential Losses

What would happen if universities were flatly prohibited from considering race in admissions? Our findings suggest that more than half of the black students in selective colleges today would have been rejected. Plainly, the education benefits that students gain from learning from one other would be lost. Furthermore, we can estimate what else would be lost as a result:

- Of the more than 700 black students who would have been rejected in 1976 under a race-neutral standard, more than 225 went on to earn doctorates or degrees in law, medicine or business. Approximately 70 are now doctors and roughly 60 are lawyers. Almost 125 are business executives. The average earnings of all 700 exceeds $71,000, and well over 300 are leaders of civic organizations.
- The impact of race-neutral admissions would be especially drastic in admission to professional schools. The proportion of black students in the top 10 law, business and medical schools would probably decline to less than 1%. These are the main professional schools from which most leading hospitals, law firms and corporations recruit. The result of race-neutral admissions, therefore, would be to damage severely the prospects for developing a larger minority presence in the corporate and professional leadership of America.

Diversity and the Business World

The reasons diversity has become so important at the highest levels of business, the professions, government and society at large are readily apparent. By the year 2030, approximately 40% of all Americans are projected to be members of minority groups. More than $600 billion in purchasing power is generated by minorities, and more than one-third of all new entrants to the workforce are persons of color. In this environment, a diverse corporate leadership can be

valuable both to understand the markets in which many companies sell and to recruit, manage and motivate the workforce on which corporate performance ultimately depends.

The chief executive officers of major corporations have so recognized. For example, the CEO of Coca-Cola has stated that, "[a]s a company that operates in nearly 200 countries, we see diversity in the background and talent of our associates as a competitive advantage and as a commitment that is a daily responsibility." Similarly, the CEO of Chrysler has stated that "we believe that workforce diversity is a competitive advantage. Our success as a global community is as dependent on utilizing the wealth of backgrounds, skills and opinions that a diverse workforce offers, as it is on raw materials, technology and processes."[2]

My own experience as a member of several corporate boards, including American Express and Merck & Co., confirms that these statements are echoed throughout the business community. I know that the business world has not failed to recognize and appreciate the importance of diversity. Corporations are making significant efforts in recruiting and retaining a workforce that values diversity and that can effectively conduct business worldwide. There is no question that graduates of universities with diverse populations — whether minorities or nonminorities themselves — offer the advantage of being valuable co-workers and managers in this increasingly diverse business climate.

Race remains a significant factor in our society. Race almost always affects an individual's life experiences and perspectives, and thus a person's capacity to contribute to the kinds of learning through diversity that occur on campuses. Both the growing diversity of American society and the increasing interaction with other cultures worldwide make it evident that going to school with "the likes of oneself" will be increasingly anachronistic. The advantages of being able to understand how others think and function, to cope across racial divides and to lead groups composed of diverse individuals are certain to increase. Moreover, our survey data throw new light on the extent of interaction occurring on campuses today and of how positively the great majority of students regard opportunities to learn from those with different points of view, backgrounds and experiences.

Conclusion

In sum, the data indicate that there is a statistically significant association between attendance at the most selective institutions and a variety of accomplishments during college and in later life. If, at the end of the day, the question is whether the most selective colleges and universities have succeeded in both enhancing the learning experience for all students and educating sizable numbers of minority students who already have achieved considerable success and seem likely in time to occupy positions of leadership throughout society, I have no problem in answering the question — absolutely.

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Endnotes

[1] The 28 colleges and universities are: Barnard College, Bryn Mawr College, Columbia University, Denison College, Duke University, Emory University, Hamilton College, Kenyon College, Miami University (Ohio), Northwestern University, Oberlin College, Pennsylvania State University, Princeton University, Rice University, Smith College, Stanford University, Swarthmore College, Tufts University, Tulane University, University of Michigan at Ann Arbor, University of North Carolina at Chapel Hill, University of Pennsylvania, Vanderbilt University, Washington University, Wellesley College, Wesleyan University, Williams College and Yale University.

[2] M. Douglas Ivester (chairman and CEO of the Coca-Cola Company) and Robert J. Eaton (chairman and CEO of Chrysler Corporation), in *Executive Council* 1998, pp. 10, 34.

THE SCHOOL-COLLEGE CONNECTION

by Arthur Levine

The school-college connection becomes a national preoccupation roughly every 30 years. The underlying concerns are unchanging — low student achievement, poor teaching, lax discipline, weak standards and overlaps, gaps and inadequacies in curricula. The simple fact is that there is a yawning gap between grade 12 and grade 13.

Four factors have made it particularly difficult to bridge the gap.

- Education governance is diffuse and systemic change is at best difficult. Arguably, the school-college connection should be a state responsibility, since schools and colleges are dispersed, decentralized and numerous. But there are 3,500 colleges and more than 15,000 school districts, and state connecting efforts have been sporadic and uneven.
- The connection between high schools and colleges is weak. Historically, high schools came along nearly two centuries after grade schools and colleges. The high school was plunked down between the two with little enthusiasm from either. In fact, well into the 20th century, high schools and colleges competed for the same students.
- Education reforms often are animated by shifting, competing and temporary changes in politics, social conditions and economics. When social change occurs in our country, the education system tends to become both the battleground for resolving our differences and the whipping boy for having permitted the changes to occur.
- The United States has the curious habit of addressing social problems vigorously only after labeling them as "crises." When a crisis is proclaimed, we mobilize our national resources to respond for a limited period of time. We do not so much solve the problem as get bored with it and move on to the next crisis. The school-college gap has not yet been declared a crisis, nor has it received sustained attention.

Despite these limitations, there are five basic policy areas in which state action is required and could make a significant contribution.

1. Providing Education to a Growing Population

The 18-year-old population in the United States will increase at the rate of more than 1.8% a year for the next decade, with the increase greatest in the West and the South. Fourteen states will experience increases of 4% or more in their elementary and secondary school enrollments between 1998 and 2008, according to the *Wall Street Journal Almanac 1999*: California (15%), Hawaii (13%), Arizona (12%), New Mexico (12%), Utah (11%), Alaska (11%), Idaho (10%), Texas (10%), Wyoming (8%), Georgia (8%), Virginia (6%), Delaware (4%), Tennessee (4%) and Colorado (4%).

Add to this the fact that the most common education campaign plank in the 1998 gubernatorial elections was reducing class sizes. The end result is that states will need to increase the numbers of schools, teachers and higher education facilities.

States, however, have the opportunity to reconsider what it means to provide more higher education. Beginning in the years after World War II, the national goal was to have a campus within easy commuting distance of all potential students. New technologies may mean the end of distance as a barrier, and allow states to reformulate the goal of providing access. Several states, from California to New Jersey, have responded to the new technologies, the burgeoning numbers of students and the rising costs of higher education by creating "virtual universities." Most impressive of all are the 17 western governors who, working in partnership with 14 major corporations, created a new entity called the Western Governors University.

The college population has changed dramatically in the past 25 years. Today, fewer than one in six students fits the traditional stereotype — 18 to 22 years of age, attending full time and living on campus. The new majority of college students are 25 years or older (44%), part-time (43%) and employed (70%). In studies I conducted between 1992 and 1997, the new majority said college was not the most important activity in their lives. Family, friends and jobs were more significant. The new majority are looking for convenience, service, quality and affordability in a college. They are eager for technologically based education accessible in the office or at home.

2. Ensuring Access to College

College participation has soared. Between 1970 and 1996, the proportion of high school graduates aged 16 to 24 attending college rose from 42% to 65%. This raises a couple of basic questions: What should the ideal percentage be? How much higher education should states buy?

Our nation has changed from an industrial to an information economy. Our economy now places a premium on intellectual capital — ideas and people, rather than physical capital (plant and machinery). Jobs now require more education. Jobs requiring less than a high school diploma are disappearing; in the main, low-end jobs in the service sector pay inadequate salaries to support a family.

Not only do Americans need more education, they need more frequent education, as the half-life of skills and knowledge is getting shorter and shorter. There is a greater need for "just-in-time" education than for "just-in-case" education, which is implicit in the four-year undergraduate model. The question facing states is whether it makes more sense in the future to focus on the outcomes or competencies of an education rather than on seat time and credits, which are emphasized now. The simple conclusion is that states will need to invest in more education, but it would be foolish merely to duplicate the current model.

State leaders also need to recognize that some groups have been left out of the expansion in college access. In fact, access to college by the poor is actually declining. The gap in college attendance between the top and bottom income quartiles rose from 22 percentage points in 1979 to 35 percentage points in the late 1980s. The odds that a poor kid will attend college are less than one in three, less than half the rate of the rest of the nation. Blacks, Hispanics, American Indians and Southeast Asian populations lag behind. We are now in a position in which the fastest-growing groups in American society have the lowest education aspirations, the lowest education success rates and the least likelihood of attending college. States face the choice of supporting children at the beginning of their lives via education and related services — or as adults, when they are broken by prisons, unemployment insurance and welfare.

The research is clear on how to improve achievement and college access for the most disadvantaged groups in the country. The research translates easily into state programs:

- Early identification of at-risk children in elementary school or middle school, at the latest
- Early intervention via enrichment, tutoring, after-school programs, social services and school-college transition programs such as Upward Bound
- Information on and experiences with colleges for parents and children
- Continuing long-term mentorship
- Financial aid to counteract rising tuition costs and growing dependence on loans rather than grants. Georgia-style Hope Scholarships are a useful model for making college far more accessible for the poor.

3. Establishing Quality Standards in Schools and Colleges

Beginning with the 1983 publication of *A Nation at Risk*, criticism that the U.S. education system compares poorly with other nations' systems has continued. Student scores on standardized tests have dropped, while remedial education is on the rise. The school curriculum is described as homogenized and diluted. The teacher corps is criticized for its low quality and its weak preparation.

A close examination of the data reveals that the criticisms are overgeneralized and overstated. In fact, 14 states have math and science scores that lead the world. While a number of suburban districts are global leaders, many urban districts are performing far worse than the U.S. averages being so broadly criticized.

The fundamental problem has been misdiagnosed. The nation's school system did not suddenly decline with plummeting test scores. Rather, test scores of the 1950s, about which we are justifiably proud, would be inadequate for the present. The challenge we face now is that the U.S. economy demands more education and higher skill levels than ever before. The acceptable dropout rates of the 1950s are intolerable today. We need to increase student performance to levels that never have been achieved.

Beyond this, there is little connection between the achievement levels of high school graduates and the admission requirements of colleges and universities. In the past decade, 73% of colleges and universities reported a rise in the proportion of students requiring remediation. Today, 35% of college students require coursework in the "three Rs." To respond to these issues, states will need to do the following:

- Adopt clearly defined state standards for student achievement and mechanisms for assessing their attainment. These standards should dictate high school graduation and college admission requirements.
- Implement school curricula capable of achieving these standards.

- Introduce professional development of the current teaching force to enable these teachers to help students achieve state standards.
- Prepare the next generation of teachers to help students achieve standards.
- Demand accountability of schools and their leaders for achieving standards.
- Guarantee permeable boundaries between schools and colleges that ensure all advanced high school students have the opportunity to pursue college-level instruction at their school or local college. Studies of schools and colleges in the late 1960s showed a two-thirds-of-a-year overlap between grades 12 and 13. This is unacceptable and unnecessary.
- Increase the focus on competency — achievement of learning outcomes, rather than seat time — during the four years of high school and the four years of college. Student progress should be determined by achievement, not by time passed.
- Ensure effective remedial programs, even if this requires, in the short run, outsourcing to profit-making companies. In the longer run, the goal is to reduce the amount of remediation by improving student performance.

4. Expanding Postsecondary Options

A major weakness in the school-college connection is the absence of first-rate vocational education. The United States needs alternatives to college that prepare students for jobs. Germany provides a model for states to consider.

The U.S. education system is principally academic. Preparation for careers and jobs is poorly developed. The nation offers vocational programs in community colleges and proprietary schools, but little outside the white collar professions in four-year higher education. Existing vocational programs are too few in number, often rely upon outdated equipment, make use of instructors without the most current knowledge of their fields and are low in status. It is imperative that our education system offer students high-quality vocational programs and dignify the work associated with such programs. It does not make sense for students to have a choice of college or nothing. Higher education has not proved the best locus for preparing students for jobs; this is an area in which Europe offers useful models to consider.

5. Strengthening Teacher Education and the Quality of the Teacher Corps

There is no task more central to the school-college connection than strengthening the education of teachers and improving the quality of the teaching force. According to the analysis and recommendations of the National Commission on Teaching and America's Future, this will require that states:

- Strengthen or close inadequate schools of education
- Improve the way teachers are recruited, educated, inducted into the profession, licensed and evaluated
- Create stable, high-quality sources of professional development for teachers
- Remove incompetent teachers and reward excellence in teaching
- Invest more in technology training for teachers
- Select, prepare and retain principals who understand teaching and learning, and who can lead high-performance schools.

This paper identifies five areas in which states could improve the school-college connection. These initiatives have the capacity to improve if not transform the entire school-through-college system.

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CHANGING DEMANDS ON TEACHER EDUCATION AND PROFESSIONAL DEVELOPMENT

by Governor James B. Hunt Jr. and Molly Corbett Broad

Teacher education has to change. The ways we have recruited, prepared and supported teachers in the past — and too often in the present — no longer are sufficient. Society has changed, schools have changed, and so must teacher preparation and professional development.

This argument is not to engage in bashing schools of education. Indeed, some of the strongest proponents of change have been deans and faculty of education. All too frequently, failings in teacher education have emanated from a lack of institutional support or failed political leadership.

In the last 20 years, research on teaching and learning has come of age. So much more is known now about how students learn, how they can be taught to learn and how people can learn to teach. More recently, how we can connect the research on teaching and the wisdom of practice constructed by accomplished teachers has become much clearer. We now have rigorous standards that connect theoretical knowledge with practical experience. It is time to put this new knowledge into practice.

It is generally recognized that the most critical factor related to student success is the quality of the classroom teacher. Students are entitled to teachers who know their subjects, understand their students and what they need, and have the skills required to make learning come alive for students. The report of the National Commission on Teaching & America's Future, *What Matters Most: Teaching for America's Future,* identified several barriers to achieving the goal of putting knowledgeable and skilled teachers into every classroom. The commission, chaired by Governor James B. Hunt Jr., also recommended ways to overcome each of these barriers.

- To overcome the barriers of low expectations for student performance and unenforced standards for teachers, we need to get serious about standards for both students and teachers.
- To overcome major flaws in teacher preparation, we need to take concrete steps to reinvent teacher preparation and professional development.
- To overcome the inadequate preparation of beginning teachers, we need to recruit, support and develop induction practices that put qualified teachers in every classroom.
- To overcome shortcomings in professional development and the weak rewards for knowledge and skill, we need specific new ways to encourage and reward teacher knowledge and skill.
- And finally, to overcome organizational barriers, we need to restructure schools for student and teacher success.

Many of America's colleges and universities have their historical roots as teacher colleges, yet teacher education in those institutions and elsewhere in higher education has not enjoyed strong support for the past half century. Even the ambitious 10-year alliance of 100 major American

research universities that banded together under the umbrella of the Holmes Group was unable to enhance significantly the public image of teacher education. As chronicled in the recent publication, *The Rise and Stall of Teacher Education Reform,* the Holmes Group, initiated in 1987, was an attempt to achieve for teachers and teacher education what Abraham Flexner accomplished for doctors and medical education early in the century, but with more egalitarian ends. Though it launched some important changes in teacher education, it stalled out before it could effect changes in teacher education as profound as the Flexner Report did in medicine.

Policy discussions can make a difference in higher education and in teacher education. On the federal level, one example is outstanding. The great policy engine that literally transformed America after World War II was the G.I. Bill. This policy helped shift the war-related economy to a more domestic-consumer economy by encouraging and making possible access to college for hundreds of thousands of average people. But the G.I. Bill also affected state policy. After all, the states had to allocate the dollars to build the classrooms and laboratories and hire the faculty to meet the rapidly growing demand for a college education.

Unfortunately, these changes had an unintended downside for teacher education. The G.I. Bill transformed many teacher colleges into more comprehensive institutions that offered a much broader array of academic and professional programs. Many of the former teacher colleges closed down their teaching laboratory schools to help fund the expansion of the colleges and new programs. Schools of education became "cash cows" to help finance the transformation of state teacher colleges to multipurpose colleges, and colleges to research universities. Higher education attracted a larger and more diverse student body, but the connections between the university and the school — the connection between research and practice — was sacrificed in the process.

Even at the traditional liberal arts colleges and universities, teacher education declined as a priority as the emphasis shifted to expanding other programs and creating new ones. Teacher preparation was relegated to the bottom on campuses, where it has been now for decades.

There are now some practical and strategic reasons why the political and institutional support for teacher education must change. According to U.S. Secretary of Education Richard Riley, our nation will need well over two million new teachers over the next decade. States such as North Carolina, California, Texas and other high-growth states already are experiencing deep shortages of licensed teachers. Painful as it is to admit, North Carolina, like several other states, has legislated some "quick fixes" to help alleviate the teacher shortage. Some of these legislative actions tilt too far in the direction of addressing quantity without equal concern for quality. Emergency certificates and other approaches may help fix the quantity problem temporarily but make the quality problem worse.

The nation does not need just more teachers; it needs more high-quality teachers. Having high-quality teachers matters. Such teachers are knowledgeable about *what* they are teaching, they are skilled in *how* to teach children of different backgrounds and abilities, and they are deeply committed to *whom* they are teaching. These are the teachers the nation needs and whom parents want and will pay more to get — and they certainly are the teachers our children and grandchildren deserve.

To produce the large numbers of high-quality teachers the nation needs, we need high-quality programs of teacher preparation and development. Teacher education needs to be a top priority. We must recognize that teacher preparation is the intersection of the public schools and higher education; it is either the glue that holds them together or a wedge that separates them.

Some critics of schools of education and teacher education suggest the gap is too large and the needed changes too great. They believe the most viable solutions lie in simply closing schools of education. We disagree. Why walk away from university-based programs of teacher education at the very time that education research is beginning to pay off? Why walk away from them when they are beginning to take the initiative to get reconnected with the schools? Why walk away from them when we have never given them the same concerted attention — with the same concerted demands for accountability — that we have given the public schools?

Our universities already have shown they can be the best in the world when they put their minds to it. Let's insist they put their minds to teacher education — their best minds. And let's insist they put their money where their minds are.

To create schools and teachers who can help fulfill the larger purposes of public education and assure success for all students, policymakers must address many practical issues influencing teacher preparation and development. A list of 10 issues and suggested actions follows. There are many more issues and many possible policy and program strategies that could be identified. The larger need is to begin engaging the entire university and the appropriate policymakers and public leaders in addressing issues related to teacher preparation and development.

1. ***The situation:*** Connections between higher education and the public schools have declined.
   What must be done: Rebuilding university-school partnerships is an essential strategy for reform in teacher education and the public schools. Policy and resource incentives must be created to promote increased involvement in public schools by higher education faculty, particularly faculty in the arts and sciences. Georgia, Massachusetts, North Carolina and other states have established promising statewide university-school partnerships focused on improving teacher preparation as part of a larger education reform agenda.

2. ***The situation:*** Educating all students to higher standards must be viewed as an interlocking set of P/K-12 and higher education goals.
   What must be done: Policies must be enacted to better assure that all high school graduates meet high standards; that schools hire only teachers who can successfully bring all students to high standards; that colleges and universities accept only those students who meet high standards; and that colleges and universities produce teachers who are well-prepared to bring student performance to high standards. Colorado, Georgia, Maryland, Ohio and Oregon have made significant progress in developing, implementing and aligning K-16 student performance standards and assessments.

3. ***The situation:*** The nation and the world are rapidly shifting to a knowledge-based economy being transformed by science, mathematics and technology.
   What must be done: The recent Milken Exchange/ISTE National Study on Information Technology in Teacher Education and the CEO Forum Report on Technology confirm the

need to improve significantly teachers' preparation in using instructional technology. State and federal technology funding policies must be leveraged to focus on preservice teachers. Similar policies must be enacted to ensure inservice teachers have access to technology and the training necessary to use it effectively.

Vermont and North Carolina have put into place policies to ensure that preservice teachers can demonstrate technology competencies as a condition for initial licensure. Florida, Georgia, Montana and Virginia have ambitious investments in integrating technology into teaching and learning. Some university systems, such as the University of North Carolina, have adopted higher minimum admissions requirements for science and mathematics to stimulate increased enrollment in science and mathematics in the public schools. Federal Eisenhower funds for professional development in science and mathematics are being used to increase student performance in Colorado, Connecticut, New Mexico, North Carolina and Texas.

4. ***The situation:*** There is a knowledge explosion characterized by a doubling of new knowledge every two-to-five years.
   What must be done: What teachers know and are able to do are directly related to student success. Policies are needed to ensure a continuum of standards-based professional development for teachers and other educators. Policies are needed to encourage higher education to develop more rigorous and relevant master's degree programs for experienced teachers and to encourage teachers to enroll in those programs, as required by North Carolina's Excellent Schools Act. California's discipline initiative is a viable model for helping ensure that teachers know the content they are expected to teach. Florida, Mississippi, Ohio and North Carolina have provided monetary incentives for teachers to seek National Board for Professional Teaching Standards certification, a powerful form of standards-based professional development.

5. ***The situation:*** Approximately 25% of people who enter public schools never graduate, with a disproportionate percentage of minorities and the poor among those dropping out.
   What must be done: Schools of education must be held accountable to produce professionals who have the knowledge and skills to teach, lead and support all students to succeed in school. But schools of education must be supported in this task by the knowledge and resources of the entire university. Preservice and professional development programs designed to help teachers and principals succeed with high-risk populations are being modeled in rural Kentucky, in the large urban school districts of Chicago and New York City, and on Native American reservations in Minnesota, New Mexico and North Dakota. The University of Texas-El Paso public school district collaborative has achieved impressive student achievement gains in many of El Paso's poorest majority Hispanic schools.

6. ***The situation:*** The U.S. school population is diversifying rapidly. Yet a mostly white and female teaching profession is teaching a growing and far more diverse student population of African-American, Hispanics and Asians.
   What must be done: First, efforts must be made to attract and retain more minority teachers. Second, teacher education programs must better prepare teachers in more realistic and successful clinical settings to work with more diverse students. Third, teachers currently in

classrooms must be provided high-quality professional development on proven strategies for educating poor and minority students to high standards. The Ohio Project for a Diversified Teaching Force, the Oklahoma University Teacher Recruitment Center and the South Carolina Program for the Recruitment and Retention of Minority Teachers are examples of programs that work.

7. ***The situation:*** There is a growing shortage of teachers.
What must be done: New policies and programs are needed to attract a larger pool of highly qualified persons of great potential into teaching and school administration. New or expanded partnerships among the universities, schools, community colleges and the business community must be established to achieve this end. New York's Teacher Incentive Program, the Georgia HOPE Scholarships, the Teacher Cadet Program in South Carolina, the North Carolina Teaching Fellows Program, Maryland's Teacher Education Scholarships and other successful recruitment models could be replicated in other states. The National Center for Precollegiate Teacher Recruitment and Recruiting New Teachers Inc. in Belmont, Massachusetts, is also an excellent model.

8. ***The situation:*** Access to teacher preparation is largely confined to recent high school graduates or those who can attend college as full-time students.
What must be done: Higher education must adjust its programs and support services to attract more mid-career adults into teacher preparation. Distance-learning technologies should be used more fully to support the recruitment, preparation, induction and development of teachers. The Troops to Teachers program, the North Carolina Model Teacher Education Consortium and initiatives in Virginia, California and other states are experiencing success in attracting mid-career teachers and providing alternative pathways to the profession.

9. ***The situation:*** A large percentage of teachers do not continue beyond their first two years in the classroom, with almost half leaving before the sixth year. This is a waste of human potential which must be dramatically reduced.
What must be done: An array of policy incentives is needed to ensure that the continuum of teacher preparation, induction and development will better assure teachers' initial success and long-term commitment to the profession. The common practice of assigning first-year teachers the toughest assignments must end. The California New Teacher Project, the Connecticut Beginning Educator Support and Training Program, mentor support programs in North Carolina and Texas, as well as the adoption of the Interstate New Teacher Assessment and Support Consortium standards across the nation are critical strategies to assist new teachers. Improved principal preparation and development is key; principals must better understand their role in teacher support and development. Programs such as Cincinnati's Mayerson Academy, the Center for School Leadership Reform and North Carolina's Principals' Executive Program are successful leadership development models.

10. ***The situation:*** Our society is highly mobile, yet the process of interstate acceptance of teacher benefits and licenses is complex and overly restrictive.
What must be done: States can and must ease the portability of teacher recruitment, teacher benefits and teacher licenses. New policies should extend to public schools the hiring and benefits flexibility enjoyed by higher education. The Education Commission of the States,

the Council of Chief State School Officers and the State Higher Education Executive Officers should join forces with others to craft recommendations regarding interstate recruitment, licensure, reciprocity and benefit issues.

U.S. communities want an educated, responsible and productive citizenry, a safe society and a productive economy. These expectations can be achieved only in a society that values and supports high-quality schools where teaching and learning are prized. Teachers who are competent, caring and fully qualified must become a reality at all schools, in all classrooms and for all students. For this vision of teachers and schools to be fulfilled, higher education must fully embrace, as a campuswide imperative, the reinvention of teacher education and do so in full partnership with the public schools. There is no greater challenge in American higher education or greater need for strong public leadership.

James B. Hunt Jr. is the governor of North Carolina. Molly Corbett Broad is the president of the University of North Carolina.

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EDUCATION USES OF INFORMATION TECHNOLOGY: A VIEW FOR STATE LEADERS

by Margaret A. Miller and Steven W. Gilbert

Higher education is being swept up in an irreversible transformation. Technology is spreading everywhere, even in the academy: more than 40% of all courses in American colleges and universities now include some use of new technology, according to Casey Green's *Campus Computing, 1998: The 1998 National Survey of Information Technology in U.S. Higher Education.* Most mainstream teachers and learners, not just the "pioneers," routinely use word processing, electronic mail, the World Wide Web and discipline-specific software applications. As Green notes, students increasingly "come to campus expecting to 'learn about' but also to 'learn with' technology."

Faculty and students who rely on these tools no longer would give them up. Recognizing that most careers now require frequent and capable use of information technology, students not only learn to use tools they will be deploying later in jobs — they learn to ask questions that technology makes it possible, for the first time, to answer. Web-based instruction also familiarizes them with the vast informational resources and virtual communities that they will need, not only in their jobs but also in their private and civic lives.

Broadened access to education is sometimes seen to be at odds with high quality. But historically, technological revolutions — such as the development of writing, printing and even college campuses — have improved both access and quality. The new telecommunications technologies promise to release some kinds of education from the constraints of time and place and thus provide citizens with new opportunities for access to higher education. As telecommunications options for video, audio and text increase in power and decline in cost, students who cannot conveniently or inexpensively meet directly with their peers and teachers have new options for participation.

For some kinds of learners and some education goals and circumstances, learning via telecommunications can be superior even to doing so through face-to-face interaction. Whether used for distance education or on campus, technology enables — and, in some cases, forces — faculty to rethink teaching strategies and account for learning results. In the process, the quality of teaching — both with and without technology — can be improved. The best technologically enhanced teaching has attributes that we know enrich student learning. Students can be active and self-reliant, receive individualized instruction and immediate feedback, work in groups, interact with people who are not nearby, control the time and place of their learning, and have access to extensive data networks they can shape and use.

But achieving technology's potential to extend access and improve higher education entails some major challenges. These include being clear about what we are trying to accomplish,

planning and paying for it, distributing resources and opportunities fairly, providing opportunities to students based on ability to benefit rather than ability to pay, promoting best educational practice, maintaining the value of our investments, containing costs and keeping track of results. When it comes to technology in particular, policymakers and educators must find ways to do the following:

- Articulate visions and plans for the uses of technology at every level — personal, departmental and institutional
- Plan realistically and fully for the costs of education technology
- Ensure equitable distribution of technological resources across sectors of higher education and to individuals
- Match teaching strategies and technologies with the needs and abilities of individual teachers and learners
- Identify the combinations of new and old technologies and teaching strategies that work best for deep learning
- Track the results, costs and benefits of the investment in education technology.

Critical Policy Issues

Creating the vision and the plan

Visions of how technology will transform higher education range from utopian to nightmarish. Both extremes paralyze rather than energize, and both impede rational planning. The most realistic visions recognize the strengths and limitations of technology, focus on those aspects of higher education and state policy that enable or impede its effective use, and link to action.

Plans need to be developed in a coordinated way at both the institutional and state levels, since each needs the other to turn its vision into reality. At the institutional level, groups such as the TLT Group's Teaching, Learning, and Technology Roundtables bring campus constituents together to link institutional mission, education goals, teaching strategies and technology applications, as well as to find practical and structural solutions to the many challenges technology poses. These include how to ensure faculty and student access; change the faculty role and reward system; provide adequate support services; train faculty, staff and students to make the fullest use of the new technologies; and support libraries in their use of information technology. To be effective, such groups need to develop strategies for consensus building, planning and project management.

State-level planning needs to start with a realistic and publicly credible vision of what the state hopes to gain by using education technology (for instance, to expand access, make the curriculum more relevant, improve teaching and learning, meet workforce needs). It needs to explore which state regulations and procedures enable or impede nimble responses to a fast-changing technological environment. It should examine ways to encourage the development of partnerships — among institutions and between institutions and business and industry — to leverage resources and avoid unnecessary duplication of expenditures. The state's plans also should include long-term financial planning that will ensure adequate and equitable funding of what must become a permanent part of higher education's resource base.

Paying for it

State and campus leaders have long struggled with how to pay for equipment and other higher-education capital investments. The high capital costs and even more unwelcome but essential support and replacement costs of technology have exacerbated this problem. Some of these costs can be covered by reallocated resources, and there should be some long-term capital savings in bricks and mortar that to some degree will compensate for the investment in technology. But the early hope that technology ultimately would make higher education cheaper to a state is not likely to be realized. Like other capital-intensive, rather than labor-intensive enterprises, technologically delivered education may become cheaper on a per-unit basis only after a certain critical mass is reached. That could happen if the state's higher education system becomes more accessible as a consequence of using the new technologies and more students enter the system. But total costs still will rise even if the per-unit costs fall. Higher education may become more cost effective, but it will not cost the state less.

Most institutions and states have been slow to face the challenge of calculating the full costs associated with education uses of information technology. States and institutions often fund new technologies as if they were buildings whose maintenance will be deferred: they provide one-time funding for hardware acquisition without an understanding of or commitment to the ongoing costs of maintenance, software acquisition, training, support services and replacement. As users flounder in the absence of financial support, equipment becomes obsolete (usually within three to five years), pressure grows for another "one-time" major budget allocation for new hardware, and, finally, there is another round of funding. This pattern may be described as crisis, lurch, crisis, lurch — with good will, responsible planning and opportunities to engage less venturesome faculty and students lost in the lurches.

Each state and campus needs to decide what it is willing to guarantee regarding access to technology for all students and faculty, as well as to calculate the costs of minimal access. Some elements of the calculation include the amount of convenient access time to equipment that will be guaranteed (especially for part-time working students who cannot easily or frequently use campus-based facilities), the equipment's power and sophistication, its replacement and upgrade cycle, the software configurations necessary and the support services available.

The degree to which students should subsidize technology — through technology fees and requirements for ownership of computers, for example — also should be considered. Beyond this, plans should include publicly defensible criteria for funding advanced applications — for the uses of "pioneer" faculty, programs and institutions — in order to ensure innovation. Willingness to support those able to experiment with education uses of information technology is essential to its most effective uses, but it does entail risk, delay and occasional failure. Every institution and state must decide how much to invest in this arena.

Ensuring equity

Equitable distribution of technological resources among and within institutions is another challenge for leaders. Whatever the utopian vision of technology as a social leveler, the fact is that wealthier institutions have been able to make computer-related technology more

conveniently available to their students, to purchase more frequent replacements and upgrades, and to provide better support services and training. Within institutions, some departments have been able to use grants and special funds to acquire and integrate information technology into their research and instruction. Consequently, the gap between "have" and "have-not" departments has widened, with schools of education, where the technological sophistication of the next generation of schoolteachers is determined, often being among the "have-nots." Planning at the campus and state levels needs to address these inequities on an ongoing basis.

The have/have-not gap also has widened at the individual level. Early access to technology, at home and school, will have a lasting impact on children's capacity to function at full effectiveness later in their lives. A state's education technology policy should reduce the inequities in technological resource distribution to individuals, which now varies depending on region, income, race and ethnicity, gender and disability. Cutting some learners off from the new opportunities afforded by education technology has ethical, political and economic consequences: it is unfair, it further marginalizes some individuals and groups, and it reduces the potential for a highly skilled and broadly prepared workforce.

Meeting the needs of teachers and learners

As new technology applications arrive at an accelerating pace, the temptation is to adopt them wholesale. But every teaching tool (the lectern, the blackboard, the Web) limits the teaching and learning options of those who use it. Leaders at all levels should recognize that mandating specific combinations of pedagogy and technology without attention to the varying needs, goals and capabilities of students and teachers unduly restricts possibilities for the appropriate and innovative use of developing technologies. Premature standardization will not get the best results; an evolving set of teaching strategies and technologies, arrived at through collaboration, is more apt to do so. For instance, publishers, instructional design professionals and faculty members need to develop compromises about formats for course materials on the Web that will shift over time, depending both on what is learned about their efficacy and how the technology develops.

Meeting the needs of learners also means students should have choices about which forms of education best meet their needs, independent of ability to pay. Some colleges and universities will continue to provide a traditional residential campus experience that stresses face-to-face instruction. Others will want to provide the working adults who constitute a large segment of their on-campus population with the convenience and flexibility of online work. Still others will offer education that occurs primarily in cyberspace.

In any of these modes, some institutions will prefer to stress an instrumental education — one that prepares students for specific work — while others will offer learning that includes the student's development, not only as worker but as person and citizen. The deep learning associated with campuses also can occur, for some students, in cyberspace. This can take place as long as resources are devoted to recreating the rich social textures of the campus, exploiting the interactive possibilities of the new technologies, providing students and faculty with the technical support they need, and developing good instructional materials.

Conversely, on-campus instruction can focus on job training and specific skill development, although distance education may prove especially cost effective for more instrumental education. Policymakers should ensure that students can choose among these options freely, depending on their needs, goals and abilities. The campus should not become a gated community for the children of the wealthy, while the virtual university is where "other people's children" go.

Promoting superior practice

In this changing landscape, superior practices will evolve that will combine old and new technologies. In the past, each time a new technology has been introduced into education, it simultaneously has been hailed as a panacea and condemned as the ultimate mechanization of learning. In either case, the fear or the hope was that traditional practice would be replaced wholesale. The reality was usually that the technology was absorbed into a larger set of instructional strategies.

For instance, many people assumed television would replace traditional education, especially lectures. Instead, many cost-effective education uses of video have been developed, accepted and integrated into classes that continue to include live lectures and discussions. With the new technologies as with previous ones, we need to learn more about the purposes and conditions under which people learn most from old and new strategies and various combinations of them.

Technology can stimulate pedagogical improvement when its use requires faculty members to plan their teaching more carefully and effectively and be more self-reflective about it. Some applications (for instance, "drill-and-practice" and testing programs) also can free up faculty time to do those things that require physical presence. As teleconferencing and asynchronous communications become more effective and less expensive, their capacity to capture the subtleties of interpersonal communication will increase pressure on faculty to understand and provide whatever it is that makes face-to-face interactions uniquely valuable. In the process, traditional forms of instruction will be rethought and improved.

Tracking results, benefits and costs

Technology repeatedly forces us to face the cost-benefit question. We already have many examples of how information technology can be used to increase access to higher education, expand what can be taught and learned, enable certain kinds of learners to master new information more quickly and deeply, and increase the quantity and quality of communication among learners and teachers.

We have few documented examples, however, of education technology uses that do those things while reducing overall costs. The important exceptions are likely to emerge in the kinds of education in which students are trying to master specific skills, gain specific knowledge or acquire certification confirming such accomplishments. As instruction for these purposes can be more standardized across multiple programs and institutions, publishers and others may be able to develop cost-effective instructional systems and materials. The more personalized and individually adaptive uses of technology are likely to

require greater investments of faculty and student time and other institutional resources. When institutions use technology to enrich but not replace current teaching strategies, education outcomes may well improve, but costs likely will go up.

Institutional leaders should pay systematic attention to the costs and benefits of the various education uses they make of technology and communicate that information regularly to state policymakers. They should continuously assess the learning that results from various modes of instruction and work with state officials to construct budgets that accurately reflect program costs. These assessment and budgeting efforts may entail some fundamental changes in traditional measures of productivity. For instance, "contact hours" no longer work as a unit of measure when contact is not at issue and faculty (and other new members of the instructional team) are using their time differently than they have in the past.

Campus leaders also should rethink strategies to reduce the costs associated with technology. For example, the widespread use of students to provide elementary technical support within colleges and universities can be extended significantly. At William Paterson University and Seton Hall University, students are given training and managerial responsibility for improving the academic uses of information technology. Not only does the institution get low-cost but highly capable technical support, but the students also receive some of the best preparation they could get for using technology later in their careers, and local industry benefits from people trained and experienced in this way.

State leaders also have a role to play in helping to keep technology affordable. State policy should encourage the development of partnerships among public institutions and between them and for-profit providers, as well as business and industry, to cover some of the capital and other investments required.

Policy Tools

State policymakers have a number of instruments at their disposal to articulate and realize the state's goals for the education uses of technology in public colleges and universities. In descending order of bluntness, they are persuasion, budget, regulation and legislation. Following are some ideas about how each might be used.

Persuasion

Most states periodically establish commissions to study the future of higher education. If such a commission were designed to focus on the education uses of technology in public colleges and universities, it could:

- *Establish a realistic vision for what the state intends to accomplish through the use of instructional technology.* Such a vision should go beyond the campus to acknowledge the interconnections among the various levels of education and deal with the need for lifelong learning and teaching. Such a vision should have price tags attached and sources of new or reallocated funding identified.
- *Develop financial strategies to realize the vision equitably and adequately.* Those strategies should be designed to meet both the start-up and the ongoing costs of

technology — from wiring campuses to buying hardware to upgrading software to training faculty to providing the continuing pedagogical and technical support that faculty and students both will need.

- *Ask institutions to develop similar visions and plans.* Institutions also should be asked to establish groups of stakeholders on campus to deal with the evolving pedagogical, technical and financial challenges technology poses, as well as periodically to revise the technology sections of institutional plans. Encouraging the development of stand-alone technology plans often results in plans for the acquisition and deployment of technology that bear little connection to institutional mission, while strategic plans that do not address education technology miss a critical variable affecting the future of any institution.
- *Suggest the kinds of partnerships (among institutions and between institutions and industry) that would enable campuses to leverage resources.*
- *Identify, for campuses, superior practices in meeting the challenges of technology use and support.*
- *Determine what information needs to be collected, and by whom, to track whether the state's resources are being used effectively and the state's goals being met*, as well as what research should be conducted about the learning that comes from various uses of technology. Persons responsible for major education technology investments at the state and institutional levels should clarify the nature and likelihood of educational benefits and at what cost.

Budget

Some states are asking institutions to reallocate existing resources to pay for technology. More than 60% of institutions pass some of the costs on to students in the form of mandatory technology fees. Often states provide institutions with incentive funding to meet targeted state needs, including technological needs, whether as a part of the base budget or as a separate grant program. Another strategy used for equipment purchases in some states is to use the state's bonding authority. Strategies that include new state money can be used to ensure resources for technology are adequate and used for their intended purposes, distributed equitably and focused strategically. In developing them, states should do the following:

- Make sure all state-supported higher education institutions have the means to meet the full range of costs for baseline-level use of technology. Target certain colleges or universities to explore innovative education uses of advanced information technologies, especially in distance education.
- Provide incentives for superior practices and for partnerships.
- Support research on how technology can be used to best effect for teaching and learning, for whom and under what circumstances — as well as on the unique benefits and disadvantages of face-to-face instruction. Collect and disseminate information about the range of new distance education capabilities and costs.
- Support the development and administration of good competency demonstrations as the basis for awarding credentials and of tracking the learning productivity of the technologies. These should be subtle and sophisticated enough to capture the skills and personal growth sought by liberal arts degree programs.

- Establish other data-gathering mechanisms to track the state's investment in technology — for instance, new forms of program budgeting. Collect and disseminate information about statewide and regional patterns of industry recruitment and hiring practices.
- Fund statewide solutions — again, with new or reallocated funds — to some problems, such as the development of virtual library resources.
- Support need-based financial aid — as well as the adequate and equitable distribution of resources, including technology, into the middle and high schools — to ensure that students have choices in the forms that their collegiate education will take.

Regulation

State regulations that pertain to the education uses of technology generally are focused on licensing out-of-state providers to operate in the state. The difficulty of regulating satellite transmissions means protection of institutional territory no longer can be the goal of such regulations. At the same time, the state still maintains its historic obligation to protect its citizens from fraud. Regulations regarding distance education should have as their goal not turf protection, but quality assurance. They should:

- Focus on outcomes. Licensed institutions should be obligated to provide evidence that their credentials are based on demonstrated competence, which may include the skills and personal growth sought by liberal arts degree programs.
- Permit new forms of partnerships between public and private providers.
- Be based on interstate cooperation.

Legislation

Legislation should be used sparingly to guide the development of something that moves as quickly and unpredictably as technology. Built into any approach to policymaking in this arena must be the means of reacting quickly to new challenges and opportunities as they arise. One initial task would be to analyze existing legislation for the ways in which it unintentionally may create barriers for the effective deployment of technology. Federal and international intellectual property laws are especially problematic for educators who hope to use information technology to improve teaching and learning.

Conclusion

Since technology is a means, not an end, the first job of policymakers is to decide what ends they have in mind when they invest in education technology. If the goal is wider access to a better quality education — more cost-effective, "connected" education for lifelong learning in a growing variety of circumstances — then concerted and coordinated state- and institutional-level planning will be required.

Valuable new education applications of information technology will continue to arrive at an increasing pace. Many will be costly to adopt, adapt and sustain, even while they make some cost efficiencies possible. Each state should establish and develop a variety of strategies to support both a baseline level of access to education technology for all citizens and the

capacity for some individuals and institutions to explore innovative education uses of the new applications.

Policymakers can use persuasion, budget, regulation and legislation to help colleges and universities combine various strategies — from face-to-face meetings in conventional classrooms to the newest forms of telecommunications — to meet their education goals. With the help of effective state leadership and support, institutional leaders can use the new education technologies to help citizens work more effectively, exercise their civic responsibilities and find more satisfaction in their private lives.

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HIGHER EDUCATION FOR THE NEXT CENTURY: CHANGING STATE NEEDS AND ROLES

by Patrick M. Callan and Gordon K. Davies

At the threshold of the 21st century, states and higher education face serious, growing and often unfamiliar public policy problems, issues and pressures. Other participants in this series of briefing papers well describe these: the impact of technological change, the growing need for closer collaboration with the p ublic schools and the dilemma of increased demand for college without commensurate state revenues. In each state, each issue will call for its own resolution. But across almost all states, a common question is emerging: How can a state best stimulate its aggregation of public and private colleges and universities — its higher education system — to best achieve that state's public purposes of higher education?

States must look at their higher education structures differently than most have in the past. We propose a new perspective that addresses at least two major emerging policy issues:

- Emphasis on the formal aspects of centralization and decentralization does not address assessment of performance in terms of state policy goals.
- Emphasis on the relationship of the state to a set of institutions does not take into account the mounting relevance of market forces, the relationship of higher education to public schools or the responsibilities of other state agencies.

Moreover, past public consensus on higher education's public purposes and the means to achieve them has eroded. A new framework is needed for examining the public purposes of higher education and the structures and processes of state governance and financing as means to achieving those public purposes.

This framework should include consideration of three dimensions. First, the *policy environment* determines the role state government plays in balancing the influences of professional values on the one hand and the market on the other. Second, the *system design* or structural environment includes the decisions states make in designing their higher education systems. And (within system design) routine *work processes* — e.g., budgeting, program planning and the like — and their effectiveness are a third dimension.

The Three Dimensions of Policy Decisions

Policy environment

The aggregation of colleges, universities, public schools and state agencies in each state operates in a policy environment that is the result of balancing — or altering the balance among — the sometimes conflicting interests of academic institutions, the state and the market. Each state is unique and balances these influences according to its own policies and priorities; there is no ideal or permanent balance.

The interests of academic institutions are familiar influences in the history and literature of state higher education policy. Our conception of market forces is not. The "market," for the purposes of this paper, is the broad array of interests and influences that are *external* to the formal structures of both state government and higher education. Our concept of the market is thus much broader than that of economists. It includes economic influences such as competitive pressures, user satisfaction, and cost and price. But it also includes other quantifiable factors, such as demographic characteristics and projections, and less quantifiable influences, such as political pressures, public confidence and the availability of new technologies.

In each state, the structure of higher education governance is shaped by state leaders' conception of its policy roles. There appear to be four such roles:

1. As *provider*, the state subsidizes higher education services with little regard for the market, as defined in this paper.

2. As *regulator*, the state specifies the relationship between institutions and the market by controlling user charges, constraining administrative discretion in using resources and generally managing institutional operations.

3. As *consumer advocate*, the state directs some funding for higher education to students, thereby increasing the influence of their market choices on institutional behavior.

4. As *steerer*, the state influences the market for higher education services to attain outcomes consistent with governmental priorities.[1] The inclusion of private higher education institutions in the design of state systems is an example of steering.

All states exhibit some characteristics of each of these four policy roles, and these roles represent a continuum, not four distinct types.

System design

States make four kinds of decisions when they design systems of higher education:

1. Decisions about *mission* divide responsibilities for achieving higher education goals among types of institutions.

2. Decisions about *capacity* determine the availability, quality and location of education programs and services.

3. Decisions about *governance structures* establish lines of authority and accountability between state government and providers.

4. Decisions about *work processes* affect important day-to-day governance and administrative practices and actually become a third dimension of a state's overall policy framework.

Work processes

Work processes include the important day-to-day practices and procedures of governance and administration. Through these operational tools of public policy, elected and appointed leaders strengthen either market or institutional influence.

Information management. The lack of information about a system of higher education — particularly about institutional and overall statewide performance — weakens both market and state influence, and renders accountability difficult. Information can be collected and made available in ways to strengthen market forces if it is directed toward clients or consumers and their decisions. It also can be collected for purposes of regulation, which may be in the interests either of the market or of some or all institutions.

Budgeting. The methods a state uses to allocate financial support of higher education are nearly as important as the amount of that support. Block grants or base budgets uniformly adjusted for all colleges and universities are the most deferential to institutional interests. On the other hand, budgets adjusted on the basis of institutional performance (for example, student retention or achievement of specified outcomes) seek to influence institutional behavior in the direction of public priorities. Budgets that require institutions to compete for public support on the basis of explicit public policy objectives seek to stimulate greater responsiveness to the market. In the latter approaches, the market is affected by state-established priorities and by public dollars that flow to support those priorities. State student financial aid programs may represent the most aggressive market strategy if they are designed to move the locus of decisionmaking from the institutions to students. There are many variations and combinations of these approaches.

Program planning. Program planning mechanisms can be market-driven, encouraging competition to serve the public. If they are weak or nonexistent, they can encourage proliferation of high-cost programs that reflect faculty preferences (often called "mission creep"). Most states regulate the establishment of new programs, and some extend this control to termination of existing ones. States can authorize or refuse to authorize institutions to operate within their boundaries, although this control is severely challenged by distance learning. Some differentiation of mission — a regulatory function — probably is needed to assure a range of choices in the student marketplace. Yet, excessive regulatory power can stifle competition, encourage cartel-like behavior, raise prices and costs, and diminish student choice.

Cooperation and collaboration. States can defer to institutions on matters of collaboration, or they can establish policies and incentives to stimulate it. The absence of action to foster collaboration tends to restrict student mobility and to encourage institutions to seek total self-sufficiency.

Next Steps: Connecting Problems With Solutions

Many problems that arise at the intersection of state government and higher education are technical issues that are routinely, often informally, resolved. But the *policy* questions center on the strategic capacity of a complex system to respond to societal needs that neither fit neatly into

the current pattern of institutional responses nor reflect the preferences of most academic professionals. These issues are not routine. They require the attention and response of a state's highest policymakers, not by imposing simplistic answers, but by creating conditions that marshall the knowledge and influence of education leaders and experts to help the public reach informed judgments about their future interests.

If an initial assessment of the performance of higher education and the challenges it faces in the future suggests a lack in capacity (as reflected in unmet needs or insufficient information), deeper probing becomes essential. A state's higher education system should accomplish more than its campuses could do individually. To do so, state leaders have to assure that solutions are reached only after examination of all three policy dimensions and the interactions among them.

Balancing Institutional and Market Influences

Activity in all three dimensions — policy environment, system design and work processes — affects performance. In each of these dimensions, public policy should seek to balance the influence of the market and the institutions in ways that promote the general welfare. Societal and institutional interests are not necessarily inimical. Most of what is valued by institutions and academic professionals serves the public welfare — academic freedom, high-quality instruction, competent graduates and excellent research, for example. But education professionals and institutions have their own interests that may not always reflect the common good. Derek Bok of Harvard University, says it well:

> No good book was ever written on command, nor can good teaching occur under duress. And yet, conceding this, the fact remains that left entirely to their own devices, academic communities are no less prone than other professional organizations to slip uncònsciously into complacent habits, inward-looking standards of quality, self-serving canons of behavior. To counter these tendencies, there will always be a need to engage the outside world in a lively, continuing debate over the university's social responsibilities.[2]

Aligning Policy Direction

Usually, neither problems nor solutions are found exclusively in one dimension of policymaking. In each dimension, state policymakers respond to incentives and disincentives using whatever tools they are given by the system's design and associated work processes. In the short term, it is relatively easy for government and higher education leaders to influence matters at the work-process level. This is one reason why solutions at this level are attractive, for example, revising a budgetary formula or giving a state agency additional authority. Tools at the work-process level are legitimate and important ones that should be employed when appropriate. But it is essential that all work processes be consistent with policy direction and system design. If they are not, inconsistency can produce policy frustration and gridlock. Over the long term, it is the alignment of work processes with the state policy environment and with the system design that makes them effective or ineffective in leveraging performance.

Compared to the operational level, the system-design level is more difficult to employ as an element of policy direction. Higher education leaders tend to prefer their current system, however configured, over possible alternatives. So do most legislators. Changing a system design inevitably creates winners and losers. To say that changing a state's system design is difficult is not the same as arguing that it is impossible. Design change seems to come more easily to federal systems that allow flexibility toward the societal environment and the possibility of change. Segmented and unified systems seem to have two of the least desirable aspects of bureaucracy: tendencies to disregard environmental change and to focus on stability.[3]

Although faculty members may be at the leading edge of scholarly and scientific inquiry, their institutions sometimes have been shielded from the marketplace and from state regulation by independent governing boards, sometimes bolstered by constitutional status. One traditional rationale for institutional independence was based on a long-held consensus that professional academic interests and the public interest were identical. Under this consensus, American higher education prospered and served the nation and states well for much of its history.

But there is evidence that this consensus has eroded: controversy over the costs and prices of higher education, student qualifications for admission, the appropriateness of institutional partnerships with corporate interests, the appropriate role of technology in the delivery of instruction, the entrance of new for-profit and nonprofit "providers" in the higher education market, and the relative emphasis to be placed upon undergraduate education, occupational education, graduate education and research. With the erosion of consensus, states increasingly are in danger of having policy environments, system designs and work processes misaligned, working at cross-purposes.

At the work-processes level, for example, a state may offer its institutions financial incentives to encourage responsiveness to the needs of a more diverse group of students, while the policy environment and system-design levels encourage a continuing professional and institutional quest for traditional symbols of prestige. State leaders who fail to address systemic alignment will approach higher education reform through a series or package of discrete, often unrelated, endeavors. They run the risks of rewarding behavior they do not want. And, most important, they are unlikely to achieve the system performance that responds to public needs.

The Importance of State Policy Leadership

It is difficult to convey a sense of urgency without sounding alarmist. But it is urgent that state leaders carefully assess the current and prospective performance of their higher education systems against their state's needs and policy goals. Responding to a changing society while preserving the best of higher education's legacies will require leadership of the highest order. It also will require policies and system designs that recognize the tension between external forces (the market) and the interests and values of higher education institutions and academic professionals. Without considering this tension, both states and the institutions will be at the mercy of short-term and short-sighted political pressures that so often lead to unforeseen and negative consequences.

Issues of continuity and change underlie the tensions between the market and institutional or professional values. Change is implicit in policies that restructure decisionmaking and finance with the aim of making institutional behavior more sensitive to external forces, such as student demand, economic development needs and state policy goals. Change is implicit also in policies that decentralize, deregulate, encourage competition to meet public needs or provide financial support to students or institutions based upon specified performance or outcomes. In these instances, market forces "steer" institutional behavior toward change.

Continuity is represented by policies and structures that insulate institutions from external demands, promote constitutional protection, use authority to buffer campuses from societal pressures, and finance colleges and universities based on institutionally defined needs and priorities.

State policies almost always implicitly balance change and continuity. But from time to time, it is necessary to revisit the balance deliberately and explicitly. This is such a time. Market-oriented strategies can promote responsiveness to societal change and ward off some of the dangers of "provider-driven" institutions that are responsive primarily to their own interests. Strategies focused on institutions, on the other hand, can protect the enormous asset that higher education represents in each state, and can sustain areas of scholarship and instruction whether or not they are in vogue.

Different times call for a different balance. The institution-building period during the decades after World War II benefited from structures and policies that insulated colleges and universities from external forces, routinely deferred to professonal academic values and often asserted public interests through regulation or centralized structures. We think this institution-building period is closing. In contrast to it, the conditions of the early 21st century call for state policies that make greater use of public investment to structure market forces to which systems and the institutions within them should respond.

This balance can result in an array of colleges and universities that will be responsive to society's changing needs. These institutions may or may not look like those of today. But however they are governed or structured, they can be responsive to societal change, continuing to support America's place in the new world economy and educating all of its motivated and qualified citizens. At the same time, they can continue to perform their core functions, preserving knowledge of the past, passing it on to the present and creating it for the future. We are optimistic about the adaptive capacities of colleges and universities and of state higher education systems. But the future depends in no small part upon the foresight and initiative of state policy leaders in articulating both public needs and policies that stimulate responsiveness to those needs.

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Endnotes

[1] See Osborne, D., and Garbler, T. (1992). *Reinventing Government: How the Entrepreneurial Spirit is Transforming the Public Sector.* Reading, MA: Addison Wesley.

[2] Bok, D. (1990). *Universities and the Future of America.* Durham, NC: Duke University Press.

[3] In *Higher Education Governance: Institutional and Market Forces*, Richardson, et al., characterize state governance structures for higher education systems as segmented, unified or federal. In the most *segmented systems,* multiple governing boards are each responsible for one or more institutions. There is no effective state agency with substantial responsibility for all higher education. State government reserves only the power to determine the appropriation each institution receives each year. Each governing board and its appointed executive represent institutional interests directly to state government through the budgeting process. Four-year institutions and community colleges each may have their own separate arrangements for voluntary coordination to identify areas in which they are willing to cooperate in dealing with state government and with each other.

In *unified systems,* a single governing board manages all degree-granting higher education institutions and represents them in discussions with governors and legislators. Unified systems are characterized by interdependence, common rules and common ways of communicating and measuring. Participants feel part of both the larger system and the institution to which they owe their primary allegiance.

Federal systems have a statewide board responsible for collecting and distributing information, advising on the budget, planning programs from a statewide perspective and encouraging articulation. Like their unified counterparts, federal systems emphasize interdependence, common rules and common ways of communicating and measuring. To these characteristics, they add separation of powers and subsidiarity. Separation of powers divides responsibilities for representing the public interest (monitoring inputs, performance and institutional accountability) from responsibilities for governing institutions (strategic direction, management accountability and institutional advocacy). The former are carried out by the coordinating board and the latter by institutional or system governing boards. Subsidiarity safeguards the legitimate roles of institutions by limiting the size and influence of central system agencies.

It is important to note that these categories of system design represent a continuum rather than discrete categories. Design characteristics tend to lean more toward one type of structure than another, but there are no absolutes.

CONVERGENCE AND COMPETITION: TRANSFORMING POSTSECONDARY EDUCATION — AN INTERNATIONAL PERSPECTIVE

by Alan Wagner

Like the United States, public authorities in the 29 advanced, democratic, pluralistic, market-economy countries of the Organisation for Economic Co-operation and Development (OECD)[1] see postsecondary education as a key to improved competitiveness (both international and domestic) and strong economic performance. At an OECD conference in the late 1980s, Jacques Lesourne, a French economist, futurologist and former editor of *Le Monde*, framed the developments that soon would be driving policy interests in the following way: ". . . each student will be competing with other students throughout the world with similar skills, [and] the efficiency of the universities [will be] . . . a major factor in a country's competitiveness. In other words, German universities will be competing less among themselves than with Japanese or American universities."

Developments and policy experience since then have helped refine thinking and deepen this position. By the mid-1990s OECD was arguing in its *Jobs Study* that "the countries and regions most likely to flourish under [present and likely future conditions] would be those with relatively dense knowledge-intensive networks of private firms and public institutions." Postsecondary education figures prominently in this vision of knowledge-intensive networks as the pathway to an improved competitive position at home and abroad. Higher education is seen as having a subtler but yet more influential role in the competition for access to key, highly educated decisionmakers in private firms, government and public life throughout the world. In commenting on the sources and nature of U.S. influence internationally, French Foreign Affairs Minister Hubert Védrine said last November: ". . . CNN and Hollywood are everywhere, and in every government in the world, there are ministers who have been educated in the United States."

While these messages are not new, they are providing the powerful rationales behind policy reflection, debate and action targeted on postsecondary education. The "competition" image provides a useful way to situate internationally U.S. and individual state trends and developments in postsecondary education. In fact, the international comparative picture may be described as one of "convergence." Countries in the OECD increasingly advance similar aims to be addressed by postsecondary education, and, in important respects, their systems and institutions of postsecondary education are becoming more similar in terms of the volume of participation, the range of programs and activities, the sources and means of funding, and the nature and scale of graduate flows and research activities. Such convergence means policy thinking and approaches in other countries and systems are now more relevant to policy development in the United States and at the level of individual states. In this respect, there is

Postsecondary education — called "tertiary education" by the OECD Education Committee — however, is meant to signal important shifts in orientation: from one stage or level of education to a fully integrated continuum of learning beginning in the early years and extending well into adult life, from programs to learners, from teaching to learning, from a rigid hierarchy of programs and institutions to a breadth of flexible, transparent and interconnected learning options. This is, perhaps, a vision of what postsecondary education, once transformed, could and should be. While many features of U.S. postsecondary education reflect such a vision, developments and new policy initiatives in other OECD countries reveal advances — in some cases, innovative advances — in this direction.

Evidence of Convergence

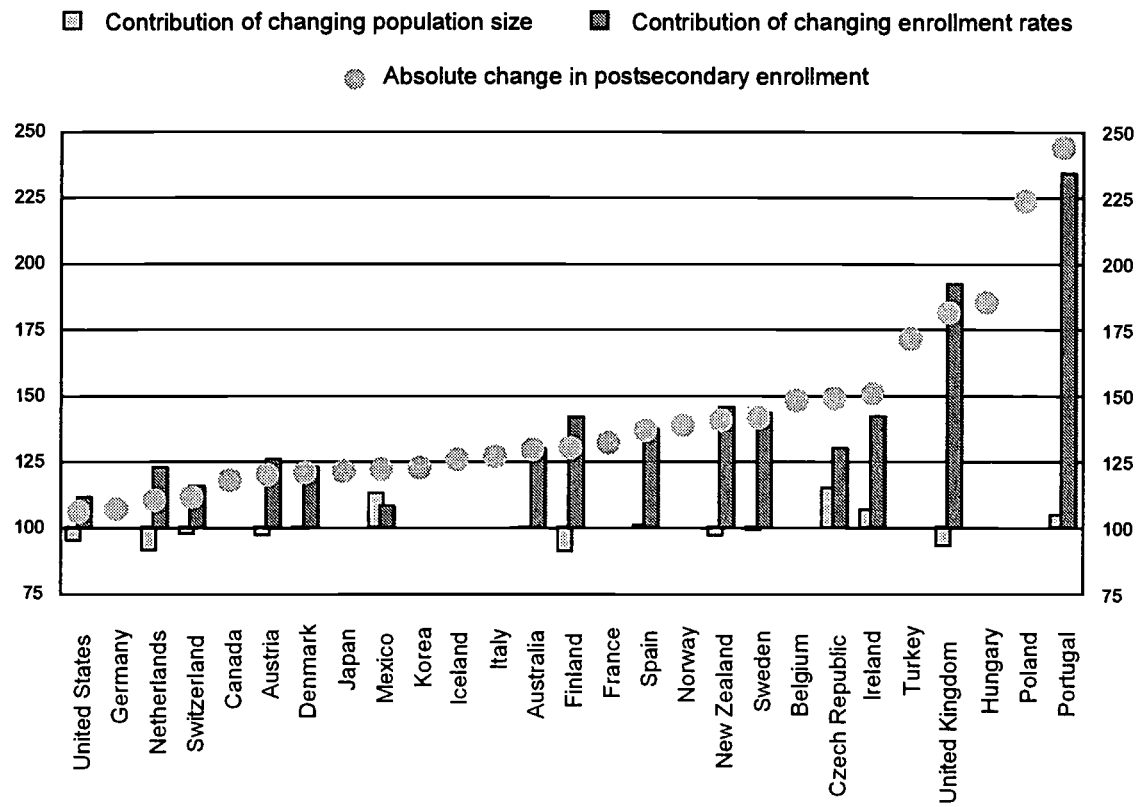
If education opportunity, provision and productivity in U.S. postsecondary education serve as benchmarks against which other countries judge their own systems, the most recent trends and patterns show many OECD countries are approaching those benchmarks. The comparative picture is provided by OECD-developed statistics and indicators.

Participation in postsecondary education

Large-volume participation in some form of studies beyond high school, which as recently as the mid-1980s set the United States and Japan apart from other OECD countries, has in the 1990s become the norm almost everywhere in the OECD area. The recent rates of increase in headcount enrollment were rapid and substantial. From 1990-96, enrollment in 15 OECD countries increased 40%, with the lowest growth in the United States. Elsewhere, from lower levels of participation in comparison with the United States, the growth is dramatic: up 22% in Korea, 29% in Australia, 32% in France, 41% in Sweden, 48% in Belgium, 81% in the United Kingdom and 144% in Portugal.

Those high growth rates imply a convergence toward large-volume participation in all OECD countries. Growth in nearly all these countries is accounted for by an increase in the rate of participation, not by demographic developments. Indeed, if the figures had tracked changes in the numbers of young people, enrollment in these 15 countries would have declined by about 5% overall.

Change in Total Enrollment in Postsecondary Education, 1990-96



Countries are ranked in ascending order of the absolute change in enrollment.

Near-universal completion of secondary education

One reason for the increase in participation rates in higher education is a substantial increase in the number of young people who complete a full cycle of secondary education. The United States led this trend: for the generation of high-school age students in the mid-1950s, the United States, along with Germany and Switzerland, showed the highest proportions who completed secondary education. Countries with relatively low numbers of high school graduates adopted deliberate policies to increase retention and success at this level: in Australia, for example, to increase retention through year 12; in France, to increase from 40% to 80% the share of young people who succeed in the *Baccalauréat* at the end of a full cycle of secondary schooling; and in Denmark, to improve learning and reduce the dropout rate in the last two years of secondary education. Partly as a result, secondary school completion in these countries increased and is now a common experience for young people in most OECD countries.

Diverse backgrounds and diverse choices

To a greater extent than in the past, patterns of access to and pathways through programs and studies beyond secondary education are more diverse. For example, from 25-45% of students in Australia, Denmark and the United Kingdom enter a postsecondary education program with something other than (or in addition to) conventional general secondary school qualifications. Moreover, of those young people who complete secondary vocational and technical education

with something other than (or in addition to) conventional general secondary school qualifications. Moreover, of those young people who complete secondary vocational and technical education in France, Germany and Japan and continue for further studies at the postsecondary level, many enter broadly based studies in universities as well as advanced vocationally oriented programs in other postsecondary-level institutions. The age at which students enter first university degree courses ranges widely, with at least 20% of entrants below age 20 and another 20% over age 27 or 28 in such countries as the United Kingdom, Norway and New Zealand.

From a comparative perspective, the U.S. community and liberal arts colleges are distinctive. But, so too are Japan's junior and special training colleges, in which study programs and arrangements continue to evolve in response to new demands and now account for about one-third of postsecondary-level enrollment. France's postsecondary-level programs in university institutes of technology and advanced technician sections — the latter located in high schools — enroll more than one-eighth of postsecondary students. Newly established or reinforced vocationally oriented institutions offer programs of studies at a level beyond secondary education in Finland, Austria, Switzerland and the Czech Republic. While diversity in students and programs is not new to U.S. postsecondary education, it is becoming more common — in some cases, in new and interesting ways — in other OECD countries.

Levels and sources of funding

The United States is a leader in the OECD area with respect to the levels of investment in postsecondary education. Available trend data, however, reveal substantial increases in spending in other OECD countries. In the first half of the 1990s, public and private spending for postsecondary education institutions as a share of national income increased by 20% or more in seven of 12 OECD countries for which data are available and by 30% or more in five of those countries, including Canada, Australia and Finland. In these three countries and Korea, spending for postsecondary education institutions as a share of national income now approaches the same order of magnitude as in the United States. Public and private spending in the United States for postsecondary education institutions amounted in 1995 to 2.4% of national income; the figures for Canada, Korea, Australia and Sweden were 2.5%, 1.9%, 1.8% and 1.7%, respectively.[2]

The mix of public and private funding has been a distinctive feature of U.S. postsecondary education, but now other OECD countries have moved to mobilize funds from students, families, employers, industry and other third parties to support expanded, more diverse and strengthened postsecondary education systems. By 1995, private sources accounted for 20% or more of the funds spent on postsecondary education institutions in Australia, the Czech Republic, Hungary, Ireland, Mexico and Spain. While tuition fees in public postsecondary education in Hungary and Ireland have been abolished (lowering somewhat the private share of spending in those countries), fees or charges have been introduced or increased (in most cases, partly offset through means-testing or a boosting of student financial aid) in Australia, Italy, the Netherlands, New Zealand, Portugal and the United Kingdom.

Rising numbers of graduates

About one-third of U.S. adults have acquired postsecondary-level education qualifications, a proportion that continues to set the United States, along with Canada, apart from other countries in the OECD area. Trend data, however, indicate increased numbers of graduates in other countries. In Australia, New Zealand and the United Kingdom, as well as in Canada and the United States, graduates of first university degree programs amounted to 30% or more of the relevant age group.[3] For Denmark, Japan, Norway and Spain, the ratio is about 25%. These ratios have been achieved in some countries through relatively high retention of students who complete first degrees. An estimated eight or nine out of 10 students who enter a university-based first-degree program in the Czech Republic, Hungary, Ireland, Japan, New Zealand and the United Kingdom complete their studies in the required number of years of full-time study. For the United States, the comparable figure is six out of 10.

While persons with postsecondary education qualifications tend also to demonstrate higher skill levels, this generally positive observation needs to be tempered. A proportion — substantial in some countries — of recent postsecondary education graduates demonstrate weak literacy skills. For 20 to 29-year-olds who have completed any type of postsecondary education, the proportions in the lowest two literacy levels range from 3-4% in Germany and Sweden to more than 20% in five other countries participating in a 1994-95 comparative assessment of literacy.[4]

There are many explanations for the differences, among which are education structures, participation rates, social and cultural norms, demographic characteristics, and levels and patterns of participation in studies. Whatever the sources of the differences on this measure, U.S. postsecondary education falls somewhere in the middle of the OECD countries for which internationally comparable data on literacy skills are available.

Innovation in Policy Thinking: Common Challenges, Different Approaches

Together, these indicators of volume, diversity, funding and graduates confirm a story of convergence in the OECD area: many more countries have — or soon will have — large-scale, diverse, mixed-funding and high-output postsecondary education systems; many more countries join the United States and each of its states in the search for ways to address what are now common concerns. Broadly, these concerns center on how best to secure postsecondary education's contributions to economic and social well-being for individuals and the society as a whole, at a time of growing competition for public and private resources.

Reforms directed at or affecting postsecondary education are well under way throughout the OECD area; in several countries, sweeping reforms launched in the late 1980s already have been reviewed and revised. The reforms cover a wide field, including widening learning options, setting standards, improving quality and mobilizing resources. Not all of the policies adopted elsewhere in the OECD area have been successful in bringing about needed changes: some are too recent to assess or limited in their reach, others have had limited effect, and still others have given rise to unintended effects. Nonetheless, the policy thinking and experiences

are useful for what they reveal about the emphases in the directions advanced and innovation in the specific measures or strategies adopted.

New ways to meet large-volume, diverse demand

The range of learning options in the OECD countries is wider than before, fostered by policies similar to, but also differ in interesting ways from, approaches followed in the United States. All countries seek to maintain or increase postsecondary learning options provided within existing structures and arrangements ("more of the same"). Many, however, allow or encourage significant departures from conventional approaches.

To note a few examples, countries are doing the following:

- Providing favorable conditions, if not direct or indirect financial support, for the establishment and development of distinctive programs within a parallel fully private sector, as in Portugal and New Zealand and to a more limited degree in France and Germany
- Introducing new ways to qualify for access to postsecondary education, afforded in the United Kingdom through new qualifications that are increasing in use so rapidly it is projected that early in the next decade up to half of 18-year-olds will possess them as postsecondary education entry qualifications
- Allowing, with greater or lesser oversight and encouragement, the expansion of participation in postsecondary-level studies through institutions or means other than formal institutions, such as further education colleges in the United Kingdom, secondary schools in France and to a lesser extent in New Zealand, and various free-standing distance education learning options such as Open Universities in the United Kingdom, Germany, Japan and the Netherlands, and Open Learning Australia which commissions and brokers high-quality course modules for wider use
- Encouraging or permitting cross-segment and cross-border cooperation, to include specific articulation arrangements in New Zealand, joint degree/diploma programs of private universities and special training colleges in Japan, and integrated study programs established between institutions in different European (and other) countries.

The examples reveal a common tendency to depart from existing structures and arrangements in efforts to widen and extend postsecondary learning options. Countries that in the past had focused mostly on conventional public and university-based provision, or relied on distinctive segments of postsecondary education, now show somewhat more varied and flexible forms of learning options: public and private, residential and at a distance, across sectors and boundaries as well as within segments. In a number of countries, interesting mixes of policies respond to large-volume and diverse demand that combine strong measures (e.g., support for distance education) with weaker, permissive measures in which third parties and partners play a larger role (opening to fully private providers). Under these conditions, demand itself becomes a more important driving force.

New thinking on standards, degrees and qualifications

In several countries, policy reflection and new strategies aim better to define and describe learning objectives. Reasons for this include a desire to address concerns raised about responsiveness to individual learners' diverse needs and interests, the needs of the jobs and careers they pursue, and the challenges of rapid and deep change in the societies in which they live. Conventional standard-setting concepts and measures have been found lacking in several countries as employers, students, finance and labor authorities advance their interests and perspectives alongside those of system- and institution-level administrators and academic staff. Recent initiatives in several countries provide examples of approaches that respond in part to this diversity of needs, interests and perspectives.

One line of development seeks to introduce clear, sometimes detailed statements of competencies in the standards established for degrees or qualifications. The United Kingdom, for example, undertook an initiative to develop a common concept of what all graduates should know and be able to do. That initiative has evolved into "benchmarking" standards of competencies for identified fields and qualifications, which continue to be elaborated and tested. The focus on learning outcomes also may be seen in the continuing development and use of qualification frameworks in Australia, New Zealand and the United Kingdom (among other countries).[5]

In New Zealand, the Qualifications Authority independently set down standards of competencies (broken down into "unit standards") for all levels and forms of education and training and recognized those students who could demonstrate the specific competencies. While the "unit standard" approach of this Qualifications Framework could not easily be applied to postsecondary education degrees and qualifications, and the authority itself has been recast in a different role, the progressive development of the framework gave rise to widespread debate and useful discussion on degree contents and standards.

Newly introduced degrees or qualifications are serving as another means to open up policy thinking on standards. An interesting example is the introduction of short university study programs, such as bachelor's degree studies, in Denmark, Portugal and the Czech Republic and under consideration for introduction or wider use in France, Germany, Norway and Italy (among other European countries). In these countries, the bachelor's degree is seen to have wide international currency, improving the participating countries' possibilities to recruit foreign students, facilitate mobility and continuation of studies for domestic students, and boost the recognized quality of their postsecondary-level studies and programs.

In addition to this feature of international standing and competitiveness, policy debates in these European countries go beyond the established experience with bachelor's degrees in the United States, Australia, Canada, Japan, New Zealand and the United Kingdom. In these countries, the debates emphasize employment-related considerations in the introduction of the degree and anticipate the return of significant numbers of graduated students after a period of work or other activity for a continuation of studies toward a master's degree. The latter could give rise to a pattern, incorporated directly into the qualification and program structures, of

several entries into and exits from postsecondary education extending well into adult life — i.e., lifelong learning developed and supported in postsecondary education programs.

A powerful drive for quality

Improving quality can be identified as a key, recurring, common and high-profile priority in the policy measures implemented in many countries. The measures are intended in part to back up new governance and financing arrangements that allow for greater autonomy in established postsecondary education institutions and also open the field to new types of programs or providers. As with the concept of quality itself, the policy initiatives take different forms.[6] In nearly all countries, evaluation and assessment processes have been introduced, recast or reinforced. The approaches adopted range from self-evaluations and assessments to broadly based external reviews and detailed inspections, the latter often involving independent, nonacademic input, perspectives and judgments to, in a few countries, performance indicators. These features are not new in U.S. postsecondary education; the scale of the effort, however, as seen from a comparative perspective, attests to the importance country authorities attach to the issue and to their own responsibilities in this area.

Further, several countries have gone beyond broadly based evaluation and assessment processes to introduce features or policies aimed directly at improving student learning. Indeed, an observed direction in evaluation, assessment and targeted policies is the effort to drive quality improvement closer to teaching, learning and the student experience. As in the United States, some countries are bringing individual postsecondary education teachers under the evaluation process and with consequences. In Belgium (Flemish Community), teachers found to be ineffective are supported in efforts to improve, and poor teachers have been reassigned out of the classroom.

Along the same line, pedagogical knowledge and skills have been considered as criteria for recruitment to academic posts in Sweden and Germany. A new direction, found outside the OECD area in Brazil and proposed in Australia, is to document on a common basis the levels of student learning. Brazil's Ministry of Education already has administered a common test to university graduates in six fields with the results reported out for each institution (eventually 13-15 fields will be covered). In Australia, the minister of education has called for a universal, common achievement test for all graduates with the stated purpose of confirming for the international academic, professional and business communities the high standard and quality of teaching and learning in — and graduates of — Australian universities.

Beyond evaluation and assessment processes, several countries are tackling perceived weaknesses in teaching and learning through policies that bridge secondary and postsecondary education or harness for all students' benefit the expertise and resources of separate institutions in the system or region. In Belgium (Flemish Community) and France, for example, comprehensive policies simultaneously seek to improve the preparation and guidance of secondary education students, as well as to promote postsecondary program adaptations that will better respond to diverse student backgrounds and needs.

In some countries, concerns about the adequacy of student provisions are being addressed through new infrastructure arrangements that pool and make accessible teaching and support resources. For example, the University of Antwerp brings together under a flexible "super-structure" the city's separate universities. The French *pôles universitaires* in such cities as Bordeaux and Strasbourg establish a framework for joint action and cooperation of the cities' postsecondary education institutions and other partners.

Innovative incentive-based funding approaches

Widely across the OECD area, new finance policies seek to mobilize private and public funding for postsecondary education and to gear that funding to demand, identified outputs and improved efficiency. Manifested in different ways and in different measures, the general trend is for countries to take a more strategic approach, relying on incentives to influence the choices of learners and the actions of more autonomous postsecondary education institutions and other providers, as well as third parties.

Much attention has been given to the increased use of tuition fees or charges as a means to mobilize additional resources and encourage learners to be active and responsive "clients."[7] The approaches also include changes in financial support or incentives for students, families and third-party funders. While similar in many respects to approaches used in the United States, financing policies elsewhere incorporate innovative features. Those include: uniform or differential fees, as established by individual public as well as private institutions in New Zealand, financed through loans contingent on income; means-tested uniform tuition fees in the United Kingdom; increased fees for students who remain beyond a fixed number of semesters or years as in the German State of Baden-Württemberg; higher fees accompanied by increased, targeted student financial aid in Italy and Portugal; time-limited student support in the Netherlands and Denmark; and deferred, income-contingent, differential student contributions in Australia. The increasing variety in the forms of loan and deferred payment obligations, as well as the rapidly growing volume of those obligations mark this as one of the more significant and dynamic fields of postsecondary education finance policy in the OECD area.

With respect to postsecondary education institutions and providers, a larger share of public funding now is allocated through outcome-based criteria with an increased margin of discretion afforded to the individual institution or provider to decide how resources are to be secured and deployed. While some countries rely on ever more detailed output or performance criteria in formula funding schemes, they build output-related criteria and incentives into more flexible institution funding processes. Under Denmark's "taximeter" principle, for example, funds are allocated to postsecondary education institutions according to the volume of *passed* examinations (the institutions are not funded for students who fail their end-of-year examinations). For most of the 1990s, New Zealand has used a partial bidding process for funded places (now replaced by a student-driven formula funding approach). Finland and France, on the other hand, follow a more flexible process of budget negotiation or contracting in which expected outputs are specified, agreed and monitored.[8]

In a departure, a number of countries have established or strengthened financing approaches that support a wider range of learning activities, within and outside of postsecondary education. In the United Kingdom, learners who open up Individual Learning Accounts (ILA) in banks or financial institutions will be eligible to receive a public contribution to spend on learning, against their own contributions. Learning eligible for ILA funding will be largely through the "University for Industry," an organization for open and distance learning which will broker and, in some cases, commission and assess the quality of all types of learning. All types of programs and providers, including but not limited to those offered through postsecondary education, are potentially covered. A new French initiative provides funding specifically to encourage postsecondary education institutions to offer new types of programs aimed at adults that are more flexible and multidisciplinary and which recognize acquired skills and deliver different qualifications than the traditional, discipline-based national diploma.

Together, the forms and combinations of financing approaches reflect a response in every OECD country to mounting resource requirements with large-volume participation at a time of growing competition for public and private spending. Public funding is being used strategically to encourage both institutions and learners to focus on success in studies, to be sensitive to costs, and to broaden the types and forms of studies considered, undertaken and offered. And, while most countries have found ways to mobilize additional private-source funding, the choices reveal very different orientations to the ways in which students, families or third parties should participate in the financing of postsecondary education.

Conclusion

"The distinctiveness of American higher education," as put in an American Council on Education report some 10 years ago, was said to be revealed by the scale of access and participation rates, diversity in institutions and students, and a partnership in sharing the costs. In little more than a decade, the development of postsecondary education elsewhere in the OECD area has altered that characterization. There are evident strengths in U.S. postsecondary education, but those strengths now are seen less in terms of distinctiveness along the dimensions described and more with reference to its great flexibility and excellence in meeting a wide range of needs. Those needs range from highly varied contexts and approaches in teaching and study programs that respond to learners' diverse backgrounds and interests, to multi-faceted responses to needs in the economy and wider society, to cutting-edge research and research applications.

These strengths now also define the targets for further development of postsecondary education in other OECD countries, where policies are opening up new ways to meet large-volume, diverse demand; introducing new thinking on standards, degrees and qualifications; combining in a powerful drive for quality; and putting in place innovative incentive-based funding approaches. The specific forms and combinations of policies differ among these countries and are of interest for what they may reveal about perspectives and ideas on aims common to nearly all OECD countries. Equally important are the actual experiences with

policies put in place in those OECD countries now trying to drive development in postsecondary education toward the realization of those aims.

Although it would not necessarily be seen this way in many of the countries identified, the reforms and policy approaches include elements of a potentially new orientation which welcomes and seeks to influence demand, encourages new and flexible boundary-spanning partnerships and networks, and helps shape an effective and dynamic "postsecondary-wide" and "lifelong" postsecondary education provision. These elements might serve as useful markers in advancing a forward-looking vision and sharpening strategic approaches for transforming postsecondary education for the 21st Century.

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The OECD's most recent work on postsecondary education took the form of a "thematic review" of its first years, leading to the publication, *Redefining Tertiary Education.* Twelve countries have participated thus far: Australia, Belgium (Flemish Community), Denmark, France, Germany, Japan, New Zealand, Norway, Portugal, Sweden, United Kingdom and United States (Commonwealth of Virginia). For each country, a review team examined the country authority's responses to a common set of background questions (providing additional, supplementary material as appropriate); undertook an 8-10 day "site visit" comprised of meetings with government officials, institutional administrators and staff, students, employers and other interested parties; and prepared a "country note" setting out the specific context and issues, policy approaches and experience, and identifying key growth points and possible weaknesses in provision and responsiveness in the country concerned. The "country notes" are not published formally by OECD, but most have been published by the participating countries and are available on the OECD Web site, Education and Training homepage.

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Endnotes

[1] Australia, Austria, Belgium, Canada, Czech Republic, Denmark, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Japan, Korea, Luxembourg, Mexico, Netherlands, New Zealand, Norway, Poland, Portugal, Spain, Sweden, Switzerland, Turkey, United Kingdom and United States.

[2] While the underlying data exclude student financial aid generally used in support of living costs and differ among countries in some details of coverage, the indicators may be taken as a broad reflection of the comparative patterns and trends.

[3] The proportions are calculated as the ratio of graduates relative to the population at the typical age at which students complete their studies.

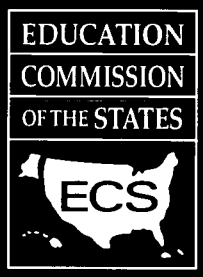
[4] The data come from the OECD and Statistics Canada International Adult Literacy Survey, and are based on tests administered in each country to samples of 2,500 to 3,000 adults broadly representative of the civilian, noninstitutionalized population aged 16-65. Individuals provided background information and described learning activities in an interview of about 20 minutes; literacy was assessed on the basis of responses to a set of tasks of varying degrees of difficulty (see references).

[5] Qualification frameworks have well-recognized weaknesses. To greatly simplify two issues: (1) it is difficult to encompass the progression and linkages in learning toward a qualification on such frameworks, where attention is given to the combination of an identified set of independent skills acquired in any sequence and at any moment in time; (2) the basis for qualifications frameworks is found most often in "employment needs," but these become more difficult to define in the light of widespread changes in the organization of work and the evolution of more varied career paths. These issues are not specific to qualifications frameworks, and the results of efforts to address them within such approaches will have wider application.

[6] Although attention is directed here at quality in teaching and learning, evaluation and assessment also feature strongly in research activities.

[7] "Client" — whether referring to students, employers or the public sector (government) — is not common or accepted terminology in a number of countries. Some European student associations argue for "student" in preference to "learner," because the latter is seen to imply a retreat on the part of government, institutions and individual teaching staff from primary responsibilities for ensuring, organizing or providing high quality teaching and learning. The New Zealand government refers to its "purchase" of student places at tertiary education institutions and, in an earlier proposal, to imposing "capital charges" on public institutions which are using the Crown's "assets" (i.e., physical plant).

[8] While the scope to choose how to deploy resources is limited in these countries by the stipulated duration of study programs and staffing levels (among other things), some countries have gone further to combine outcome-based funding with targeted funding initiatives which specify resource allocations, e.g. favoring the use of ICT in Denmark or enhanced student academic support and advisement in Belgium (Flemish Community).



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